

COAL AGE

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Federal Control of Coal

ACTING under the authority given him by Congress, President Wilson has issued orders fixing the maximum prices for both anthracite and bituminous coal at the mines. The profits of jobbers and middlemen are also established.

Only the retailer remains to be cared for, and he will be controlled if possible by publicity. If this plan fails, law and legislation doubtless will be called to support the government's efforts.

Already the citizens of New York City and Brooklyn are informed concerning the costs and profits of the local dealers. Other cities and towns will be enlightened in the same way. It isn't likely, therefore, that there will be any so-called excess profits in mining or selling coal from now until the war ends.

The outcome of this action on the bituminous industry is perplexing. Certain fields where costs are low can produce and make a small profit under this Federal ruling. Other districts such as the "Clearfield Region" in central Pennsylvania maintain that the President's order will close many mines unless there is a readjustment of wages and railroad rates. Early efforts to adjust miners' wages to the new scale of coal prices have already precipitated strikes at several mines.

SOME OPERATORS will accept the President's action without question. Other producers who are harder hit will work for a modification of the order. Senators Penrose and Knox, of Pennsylvania, may be expected to lead such opposition. Chairman Peabody of the Coal Committee says: "We must avoid interfering with the President's policy in any way. I believe it is our duty, whether we believe the President to be right or wrong, to support him absolutely."

It is unfortunate that this situation has arisen at this critical time, when all America should be pulling together. However, it is difficult to avoid the conclusion that prices in manufactured products must likewise be fixed, or there is basis for a charge of discrimination. The operator must buy his rails, machines, motors, wire, cables, oil, grease, etc., for less if he is to sell his product for so little.

The anthracite industry is not affected. The hard-coal mines now profit from observing a wise policy. In good times and bad, anthracite is sold at a fixed price based on the cost of mining plus a fair profit. When the hard-coal operators might have had more they stood pat. Many bituminous operators for years have advocated a similar control for the soft-coal business, but the government said, "No!" The result has been an unprofitable bituminous industry struggling to live and hardly to be blamed for taking a profit when the opportunity came once in a generation.

There were less than 6000 bituminous mines in the United States in 1915; now there are 19,107 such operations. It is quite likely the industry would have regulated its own prices downward this fall without the President's action. However this arbitrary action of the government, taken in haste without giving the bituminous operators a single opportunity to present their case, is sure to result in such unsettlement that dangerous fuel conditions will certainly prevail in many localities.

THE question is heard, "What is the end to be?" Not Government ownership; Great Britain has wisely declined that. Our government will also balk at such a swallow. But we may get what the English now have—full state control. Great Britain controls all the finances of the collieries and dictates the dividends which they are to pay after appropriating the lion's share of the profits.

There is quite some difference, however, between control in England and the plan being adopted by America. The controller of British mines has forbidden even contract coal to be sold at less than the new scale prices, which prices are sufficiently remunerative to the collieries to cover the present heavy mining costs as well as the equally heavy excess profits taxation. At any rate, it is significant that the British colliery owners are not complaining. We are concerned only with a maximum price, the British consider also a minimum.

America might profitably study English procedure, especially British control of labor. In the week ending Aug. 11, our mines operated at only 71 per cent. of capacity owing to strikes. We have serious problems to solve, and this first attempt at Federal price fixing presents forebodings.

Ideas and Suggestions

The Spirit of Service

BY GEORGE N. LANTZ
New Straitsville, Ohio

Jones, who was in charge of a small coal operation, got into some difficulties, to overcome which he needed the services of an engineer. He called Brown, his partner, by "long-distance," but Brown was unable to secure one.

Smith, an engineer at a near-by, larger mine, offered his services to Jones, and put in a few hours at the latter's plant, removing the trouble and telling Jones how to guard against a repetition. Smith made no charges.

Jones informed his partner of the proceeding, and Brown called Smith up on the telephone, asking him to name a price for his services.

Said Smith: "No, I'll make no charges. We fellows who are in the field learn, after a time, that it pays to help a man out occasionally. Some of us give each other the benefit of our experiences and, when we can, we give service—a sort of reciprocal arrangement, you see."

"But," said Brown, "we are not in position to return any service to you that will equal your service to us."

"As to that," replied Smith, "you can pay whatever debt you owe me by passing the service along. I feel this way about it: I didn't gain my position in the mining game by my own efforts. I've had help, and more help, all along the line. And I'd feel rather small if I failed to help a man out whenever there was a service I could render him at no cost to myself. If every man kept a record of these things, it would show him so far in debt that he'd never get out, for such services are always worth more to the man who receives than to the one who gives. So we just receive a favor, pass another one on to the next man, and call the account closed, so far as expecting any return."

Smith's attitude is the proper one. There is need for larger service and greater coöperation in the mining community—coöperation between operator and miner, between engineers and officials, between the sales force and the operating force, between producer and consumer, between company and company, between man and man.

The spirit of helpfulness, the spirit of altruism and of true coöperation, will help every man engaged in the mining industry, and, just now, will also help our Government, probably as much as buying a bond or planting a patch.

Corporation and Coöperation

BY WILLIAM RANSOM
Elizabeth, N. J.

Corporation and coöperation are two words bandied about today in irresponsible fashion. It would often seem that their respective meanings convey antagonism rather than harmony, when the truth is they both mean

accord and not discord. The corporation must have coöperation, for otherwise it is nonexistent except as a mass of unrelated atoms—driftwood as it were. So the corporation needs co-operators in just the extent the human beings could not coöperate and coördinate without using mind and intelligence to do so. This is the age of progressive thinking. Employer and employee are all thinking hard, and there are many signs pointing to a unification of men and methods. Just to the degree we awake to this broader vision shall we find a tendency toward peace, whether it be of the world war or a settling of the misunderstanding between what is usually called

If the chap in the basket were gifted with a keen mental vision, or had only a modicum of common sense, he could have foreseen that the only elevated position that carries with it an advantage and a sense

The Bluffer



-His Rise



and Fall

of security is one built on a solid structure of knowledge and all-around capability. Hot air may hoist a man but it won't keep him up there.



capital and labor. Many theories and doctrines are being presented for the healing of the body politic, social and physical. They are exploited under many guises.

Some of them preach a democracy that is but a subtle autocracy; others propose to hold all things in common by seeming fair ways that would all but paralyze the God-given right of all men to individual unfoldment and limit a just return for intelligent labor. Any doctrine opposed to individual freedom, although masquerading under false economics, stifles the initiative and breeds apathy—the chief invention of Satan. Experience teaches that there is an eternal linking of corporation and coöperation which shows plainly that there will come a time of recognition of the individual and collective understanding of men. The more this is apparent the sooner will adjustment be reached. The need is acute just now for an educational campaign in the high places and in the low places, to make plain by object lessons that we are all needed to express

the full compound idea. Existing conditions, therefore, should not be viewed by any one with a sense of discouragement, because there are cheering glimpses that we are on the right track.

Efficiency is the order of the day. It is the top notch of efficiency to make more and more evident that self-interest is best assured by looking after the interests of "the other fellow." In the proportion that this method is operated is it found most practical. Let us hope it will not be so long before we shall all grasp the fact that to "love your neighbor as yourself" is good business and good government for corporations and coöperators. More than that, it is scientific.

Little Things in Coal Mining

I once had charge of a mine in Ohio where the coal was delivered to the tippie down an incline plane. About fifty of the mine cars were equipped with wheels held on by invisible linchpins. These pins would frequently wear and allow the wheel to come off the axle, and at intervals I would report delay on account of a wreck caused by a car wheel coming off on the lower end of the incline.

The general manager asked me why it was that I could not prevent those wrecks, and I explained that we could not tell whether anything was wrong with the wheels until one was wrecked. He soon replaced those wheels with new ones that had outside linchpins.

I have known of motormen going half a mile to get a coupling pin if one broke on their trip, when they should have had a couple of extra pins on their motors. Many

mines are equipped with gathering locomotives, and in two mines with practically the same natural conditions one will show a considerably higher percentage of efficiency than the other, and the superintendent would be unable to account for the difference. Quite often a large part of it would be due to bad bonding, dirty roads and missing switch-throughs, patchwork in motor repairs and other small things that seem trivial but are necessary to the success of a system. I have seen mines in which cars have been cut over a frog on the main road for years, just to avoid the expense of placing a guard rail. In the selection and preparation of mine timber there are a few lit-

Study, Thought and Discussion

Study is the search for, and the acquisition of, the material to which thought can afterward be devoted. It entails a seemingly endless collection of facts and figures and requires an infinite patience and balanced judgment. A mere accumulation of figures and descriptions will later be rejected by thought as waste. Study has to be directed; it has to have an object to obtain the greatest results with the minimum of effort. Otherwise the mind becomes clogged like a weedy and overgrown garden. Restraint from mere omnivorous reading and replacement by directed effort argue the production through thought of well-balanced conceptions.

Thought is the organized arrangement of the data collected by study. Through its agency facts are visualized apart from fancies; phrases, sentences and subjects take shape and fade or grow stronger as the light of thought shows them worthy of perpetuation or of the reverse, oblivion.

Discussion is the acid test provided by other men's arguments. Out of its oftentimes fiery ordeal the idea and the proposal emerge greater and broader than before. Fortunate is the man whose projects reach this stage, for not a few go down to defeat before they even see the light of day. Discussion molds and rounds and compares, and generally welds the ragged straying ends of a man's phantasy into a harmonious whole. Discussion is the anvil for the hammer of criticism.

tle things that are important. Many coal companies buy mine props without any specification except that they be of certain lengths, and they therefore get very unsatisfactory timber. They think they are saving money by getting timber somewhat cheaper per foot, but it is really necessary to use twice the amount that would be needed with a better grade of timber, so it can readily be seen that those companies that do not specify the kind and quality of timber are laboring under a false idea of economy.

On entry tracks in mule haulways one frequently finds wooden connections that are allowed to remain in use until the cars wreck going over them, and side tracks are permitted to get so dirty before they are cleaned that the drivers are disgusted when they try to get their loads together.

Motors, pumps and bonding should be frequently inspected and any small defects immediately remedied. Loose nuts on pumps and motors that could be tightened with very little trouble at the time they are discovered are often neglected, leading to trouble. Broken bonds and bad returns caused by poor wire splicing will cut quite a figure in power costs. Loose slate which is not taken down or properly supported after it is discovered is a little thing that sometimes results disastrously, and no foreman should tolerate such conditions.

The foregoing tends to prove that the mine foreman who is master of the little things in mining is going to minimize his troubles with the larger things.

Interesting Electric System of Haulage at a Coal Mine—I

BY FRANK HOSKINSON

Chief Electrician, Victor-American Fuel Co., Delagua, Colo.

SYNOPSIS—This article goes into the working details of what is called the "old" and the "new" system of electric haulage in successful operation at the mines of the Victor-American Fuel Co. at Delagua, Colo. The old system is standard electric haulage as applied to coal mines. The new system is a combination to increase the efficiency of the substation and allow more power for the operation of the electric mine locomotives, without going to the expense of installing another unit at the substation.

THE Victor-American Fuel Co. has in operation at Delagua, Colo., three mines—the No. 1, or First North Mine, the No. 2, or Second North Mine, and the No. 3, or Third North Mine. The First North Mine is a drift, and the last parting inside is over three miles from the tippie; electric locomotives haul the trips of 30 cars, averaging about two tons of coal per car, from the inside partings to the tippie. The Second North Mine is also a drift, and the last inside parting is over two miles from the tippie; electric locomotives haul the coal out to the tippie the same as in the First North Mine.

The Third North Mine is a slope with three entries, called the Third North, the Fourth North and the Fifth North. The coal is hauled in trips of 20 cars from the inside partings to the slope, or rope partings, and from the rope partings it is hauled to the tippie by an electric hoist. The Third, Fourth and Fifth North inside partings are over four miles from the substation.

The electric power for the operation of the mine-locomotives, hoist, pumps and mining machines is de-

livered to the feeder and trolley lines by a substation located near the tippie. The substation receives alternating current at a pressure of 23,000 volts from the

Trinidad Electric Transmission and Power Co., the current coming a distance of over 30 miles. The 23,000 volts are reduced to 2300 volts through three single-

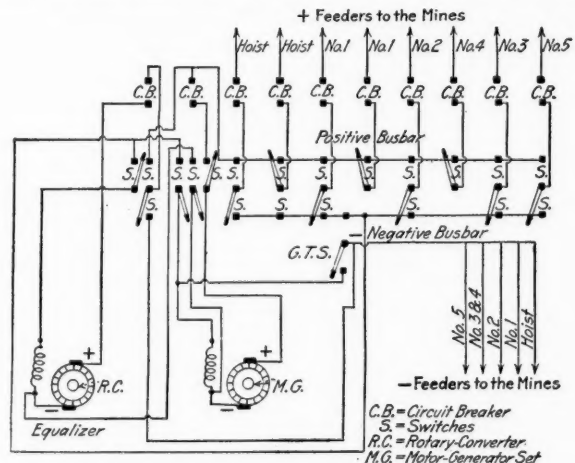


FIG. 2. DIRECT-CURRENT CONNECTIONS AT SUBSTATION
Series operation of machines, new system

phase transformers, the 2300-volt lines then being connected to the switchboard busbars. The lines to the mine fans, shops, tippie, pumping plants and town lights are each controlled by a separate oil circuit breaker, and transformers are located at the mine fans, shops, tippie, pumping plants and town lights to reduce the 2300 volts to 440 volts, three-phase, sixty-cycles, for the operation of motors, and to 220 or 110 volts for electric lights.

The substation equipment consists of one Allis-Chalmers motor-generator set driven by a 2300-volt synchronous motor; the direct-current generator is rated at 275 volts, 1090 amp. There is also installed one Westinghouse rotary converter rated at 275 volts, 1092 amp., 300 kilowatts.

COMPARISON OF ROTARY CONVERTERS AND MOTOR-GENERATOR SETS

The standard practice of operating the two machines is what we call our "old" system; that is, the direct-current sides of the machines are operated in parallel, which gives a pressure of 275 volts; the amperage of the two machines is combined, or added together, thereby giving approximately 2200 amp. at a pressure of 275 volts.

The substation equipment is out of the ordinary, as will readily be seen from the comparison made below. To secure the best results in parallel-operation of electric generators, they should be of the same design and construction and possess the same or as nearly as possible the same characteristics.

A motor-generator has a decided advantage over a rotary converter in special cases, as in the former there is no electrical connection between the two sides of the system and independent voltage adjustment over a

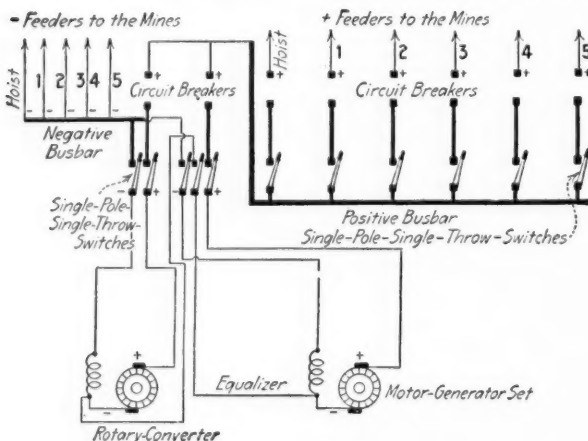


FIG. 1. MAIN DIRECT-CURRENT CONNECTIONS
Parallel operation of machines, old system

livered to the feeder and trolley lines by a substation located near the tippie. The substation receives alternating current at a pressure of 23,000 volts from the

wide range is possible; also the regulation is not so greatly affected by the fluctuations of the supply current. The ratio of the direct-current voltage and the alternating-current voltage in a rotary converter is practically a fixed quantity, and this is a serious disadvantage where it is desirable to have the direct-current voltage at the machine increase with the load, so as to keep it constant at some distant point.

Adjusting the field strength of a rotary converter changes the phase of the current, and a lagging alternating current passing through an inductive circuit causes a decrease in the voltage, while a leading current will cause a rise. As long as the load was at a certain value and the alternating current was steady and at a maximum, and the direct-current load was from 25 per cent. to 50 per cent. of the rated capacity of the two machines, they operated together fairly well. At no load, full load or overload it was necessary to constantly regulate the voltages by means of the field rheostats.

Whenever the alternating current was fluctuating and the frequency was low it was impossible to regulate the two machines and keep them together, so to keep the mines going it was necessary to shut down the rotary converter and supply the lines with current from the motor-generator set. This made possible the partial operation of the mines, and as it was of frequent occurrence it was the cause of many delays. The peak load is approximately 1000 hp., or 746 kw., while the combined ratings of the two machines is only a little over 600 kilowatts.

It is much more satisfactory to operate a motor-generator set and a rotary converter in series than in parallel. If the power factor is low, it is impossible, in the parallel system, to operate the rotary converter and the motor-generator set together; but if the power factor is low in the operation of a motor-generator set and a rotary converter in series on the direct-current side, the only disadvantage is that it lowers the direct-current voltage.

In parallel operation it is necessary to constantly regulate the voltage of the machines at all changes in

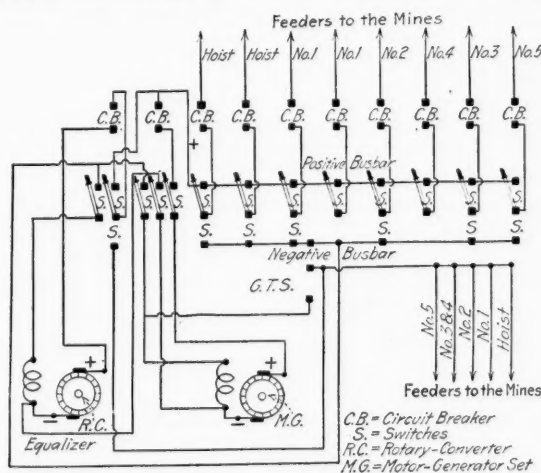


FIG. 3. DIRECT-CURRENT CONNECTIONS AT SUBSTATION
Parallel operation of machines, old system

the load, but in the series operation of the machines they are practically self-regulating under almost any load, or at any average power factor.

Because of the long distances between the substation and the inside partings, the line loss, or drop in voltage, was great; and the rails being a very poor return

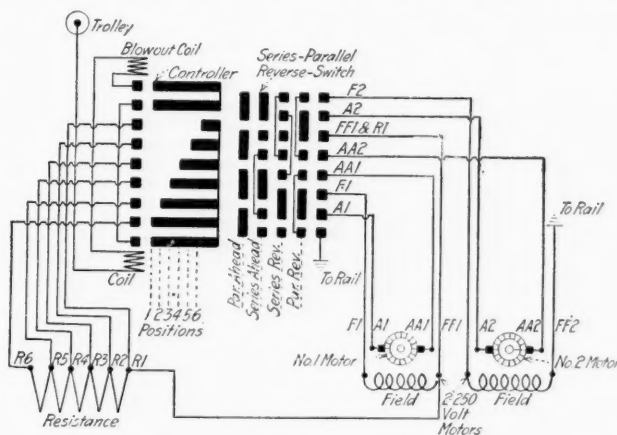


FIG. 4. ELECTRIC MINE LOCOMOTIVE WIRING
For old system of one trolley pole and rail

because of the high resistance offered by loose bonds and broken rails, it was impossible to start trips at times if the voltage was low. Especially was this true at the points more distant from the substation. On account of the low voltage and poor return, the armatures and field coils of the locomotives became very hot after a few trips, and in time this charred the insulation to such an extent that the armatures and field coils had to be rewound.

The standard system of electric haulage at all coal mines is the use of a direct-current voltage of from 250 to 500 volts. Some mines have the 250-volt systems and others have the 500-volt systems. Each has its advantages and disadvantages.

The advantage in having a 500-volt system at a coal mine is that with a potential of 500 volts about one-half as much copper is required to transmit a certain power a given distance as would be required with a 250-volt system. One of the disadvantages in having a 500-volt system lies in the fact that it is more dangerous to any one coming in contact with it than would be the case if the system were of 250 volts. A circuit of 500 volts is classed as a medium voltage only when it is safeguarded against a rise.

In all motors, controllers, resistance, etc., the chances for a breakdown in the insulation are greater with the 500-volt circuit than with the 250-volt. In the use of electric lights in the mines the 500 volts has the drawback that it is necessary to wire the lamps in series, whereas in the use of a 250-volt system it can be wired in parallel, which is in itself an advantage as the wiring of lamps in multiple is easier to maintain.

What is called the "new" system at the Delagua mines is a combination of both the 250- and the 500-volt systems with the disadvantage of the 500 volts practically removed, as far as persons coming in contact with the wires is concerned.

The old system of electric mine haulage at Delagua is the operation of the substation in parallel—that is, at a pressure of 275 volts—the load or current in amperes being divided under normal operation between the two machines.

In the operation of the mines on the new system we have made some changes in the wiring of all the mine locomotives and have put in a second trolley line

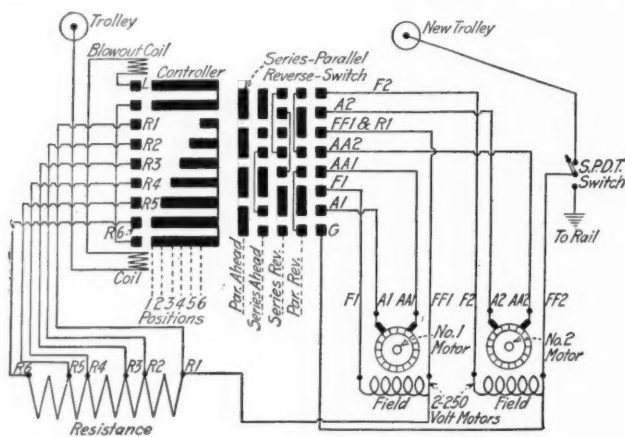


FIG. 5. ELECTRIC MINE LOCOMOTIVE WIRING
For new system of two trolley poles

along the main haulage roads. We have added another trolley pole to each locomotive. We have changed the wiring at the hoist and at the substation. Under the new system we operate the two machines at the substation in series, with the positive of one machine feeding one of the trolley lines and the negative of the other machine feeding the other trolley wire, while the negative and the positive of each machine are connected together and also connected to the rails. By this arrangement we have a pressure of 500 or more volts between the two trolley wires and a pressure of 250 volts or more between the rails and either one of the trolley wires.

LOCOMOTIVES ARRANGED TO KEEP MOTORS IN SERIES

All electric locomotives using the two trolley lines get a pressure of 500 volts with a metallic return. The locomotives are arranged so as to keep the motors in series when using the two trolley lines. The pumps, mining machines and all single motor locomotives are connected to the rail and one or the other of the trolley lines, so as to divide the loads up as near as possible.

In Fig. 1 is shown all the main direct-current connections at the substation, also the positions of all the switches. This diagram shows the connections, switches and positions at the substation for the old system of operation—that is, in parallel—before any changes were made for the new system.

The operation of the electric mine locomotives on the old system was the use of one trolley pole and the rail with a series-parallel reverse switch on all the controllers. In the actual operation of the locomotives the series position was seldom used, for the reason that in series the current was so low for each motor that it would not exert any great effort. Furthermore, the motors have a greater tendency to slip the wheels in series than in parallel; while the speed is very slow and the drop in voltage so great that locomotives on the inside partings did not have enough power to start the trips. The parallel position of the switch was used almost exclusively, as this allows each motor to get the full line voltage. Even then the locomotives had considerable trouble in getting the trips started,

which was especially the case if the hoist or some other motor was pulling a trip; and if the power factor was low at the substation, it was almost impossible to do anything at all.

Under our new system we have no trouble at all from the above-mentioned difficulties. We have operated our substation on power factors that under the old system would have caused us to shut down. The new system of operation was a decided success, as the locomotives hauled the trips with ease.

The output of coal from the mines at Delagua is approximately 2000 tons per day. In operation we have one locomotive in the Third North, three locomotives in the Fourth North, one locomotive in the Fifth North, one locomotive in the Second North and five locomotives in the First North. In addition we have in use five mining machines and ten electric pumps underground, and our largest load is the electric hoist that pulls the trips of coal from the No. 3 mines or from the slope partings.

The hoist is connected to two 150-hp. direct-current motors in series-parallel—that is, the control was fixed before we made the changes to always start the motors in series up to the fifth point and then to change from the series to the parallel points. The average peak load for the hoist is 1000 amp. at 250 volts = 250 kw. = 335 hp. The average load is 800 amp. at 250 volts = 200 kw. = 267 horsepower.

Fig. 1 also shows the direct-current wiring and the positions of all the switches at the substation for the operation of the two machines in parallel, the 250-volt positive lines to the trolley wires and the negative lines to the rails. In Fig. 2 is shown the direct-current wiring and the positions of all switches at the substation for the operation of the machines in series. This allows a pressure of 500 volts between the negative and the positive busbars and a pressure of 250 volts between either the negative or the positive busbars and the rails, or rather the feeders that run from the substation and the rails.

The hoist has three feeders—one from the negative and one from the positive busbars, and one from the

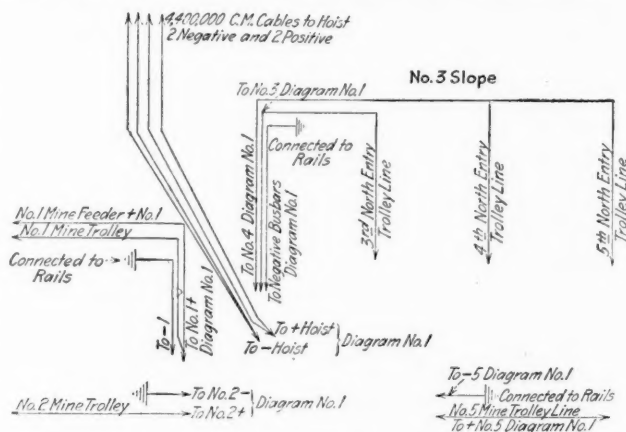


FIG. 6. FEEDER AND TROLLEY LINES FROM SUBSTATION TO MINES
Old system before any changes were made

neutral connection between the two machines. This gives voltages of 250 and 500. No. 1 mine also has the same connections.

The wiring at the substation before any changes were made is shown in Fig. 1. Fig. 2 shows the wiring at the substation after all changes were made for the new system of series operation. Fig. 3 is the same as Fig. 2, except that the positions of the switches are for the old system of parallel operation.

In Fig. 4 is shown the complete wiring of a standard-type electric mine locomotive and controller. The series-parallel reverse switch is so arranged that at position series ahead the locomotive travels forward with the No. 1 and No. 2 motor in series. By moving the switch to parallel ahead the locomotive travels forward with the No. 1 and No. 2 motor in parallel. This method of wiring is standard for all electric haulage locomotives and is what we used on our old system. In Fig. 5 is shown this same wiring after we had made all the changes for our new system. In our new system we have a safety block on the series-parallel reverse switch so arranged that the switch can only be put to the series positions.

It will be noticed that there is a single-pole double-throw switch marked *S.P.D.T.* on the diagrams. To

reverse switch over to the parallel positions. The locomotives will then be operating on 250 volts with the new trolley as a metallic return, or by fastening the new trolley pole down and putting the *S.P.D.T.* switch in the down position the locomotive can be changed back to the old system of one trolley pole and the rail.

It will also be noticed that the motorman in starting on the new system can have both trolley poles on the wires and have the *S.P.D.T.* switch in the down position. This permits starting the trip very slowly, and as soon as the trip is in motion the motorman shuts off the controller just long enough to change the *S.P.D.T.* switch from the down to the up position, then putting the controller on again, a notch at a time. This gives him the advantage of starting up his trip of loads in series, and as soon as the trip is in motion he changes to full pressure, or voltage, for each motor.

FIFTY PER CENT. MORE RESISTANCE ON NEW SYSTEM

It will also be noted that on all the motors we use on the new system we have added about 50 per cent. more resistance than we had in use on the old system. This was made necessary by the fact that all the resistance formerly on the motors was built for carrying a current at a pressure of 250 volts, and as the current in use on the new system is at a pressure of 500 volts it was found that the old resistance was not enough to choke the current down when starting if we were going to run the locomotives on the new system all the time and not figure on changing to the old. We could have taken the original amount of resistance and rebuilt it so as to give it about one-half the carrying capacity it had before, and it would then have served the purpose; but as we wired our locomotives, substation and all lines so as to be able to change from one system to the other by simply changing the switches, we had to add about 50 per cent. more resistance.

The new resistance that we put on the locomotives for the new system is built to carry only one-half the current that the resistance formerly carried on the motors. The new resistance is arranged so that it can be cut out of the circuit, if necessary in the operation of the locomotives on the old system, but in our actual trials we have found it practicable to leave the resistance in when operating on either of the systems, as it is arranged to be cut out on the first two or three points of the controller.

In Fig. 6 is shown the arrangement of the feeder and trolley lines from the substation to the mines before any changes were made. It shows the lines as we used them on the old system of one trolley line and the rail. Fig. 7 shows the arrangement of the feeder and trolley lines from the substation to the mines after all changes were made for the new system of operation with two trolley poles.

It will be noticed that we have only put the two trolley lines in the No. 1 mine and in the Fourth North entry of No. 3 mine, as these are the places from which the bulk of the coal comes. These places are ones farthest from the substation and have the largest drop, or loss of voltage. Having these places arranged with the two trolley lines and also having the hoist arranged with the same system has made a decided change in the matter of power.

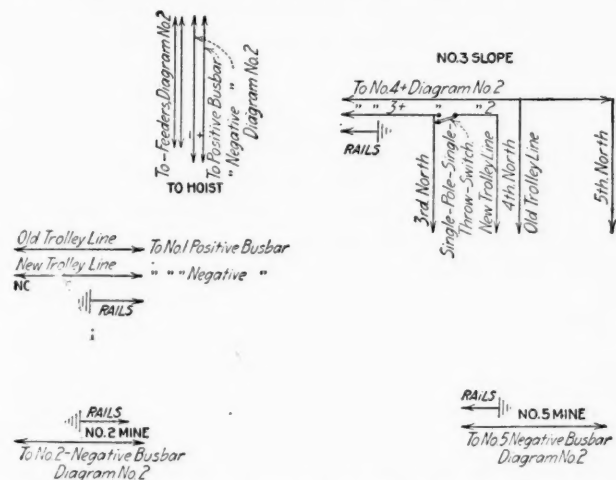


FIG. 7. FEEDER AND TROLLEY LINES FROM SUBSTATION TO MINES

Showing arrangement after new system was installed

this switch we have taken the connections *G* and *FF2*, and connected them to the blade, or hinge, part of the *S.P.D.T.* The top contact of this switch is connected to the new trolley pole and the bottom contact is connected to the frame of the locomotive. By this arrangement with the *S.P.D.T.* in the up position and the two trolley poles on the two trolley wires, and with the substation operating on the new system the power comes into the motors from the trolley to the controller, then to the resistance; from the resistance it goes through the fields of No. 1 motor, then to *F1*, Fig. 1, then to *A1*, Fig. 1, through the armature of No. 1 motor to *A41*, to *A2*, then through the armature of No. 2 motor to *A42*, to *F2*, then through the fields of No. 2 motor to the *S.P.D.T.* switch and from there to the new trolley, completing the circuit, 500 volts passing in series through the motors and having a metallic return.

The substation can be in operation on the old system and the locomotives use the two trolley poles by removing the safety block from the controller and putting the

The mining machines cut coal on the night shift, and on the old system with the rail as a return it was a slow-work proposition as the loss of current was great. At night we only operate one of the machines at the substation, and the new trolley line acts as a metallic return. By this arrangement we have a metallic return for all the mining machines at night and can get 50 per cent. more work done; also, as stated before, it is much better for the windings, as the insulation on the windings is burned and charred when the return is poor and the voltage low. We have reduced our troubles in regard to the windings heating up on the old system to quite a little lower temperature on the new. In fact, I think it will reduce, by 50 per cent., the troubles we have had in the way of windings heating up and burning out the armatures and field coils. It has already proved a success in the operation of the substation on low power factors.

(To be continued)

The Puritan Mine

BY SAMUEL TESCHER

General Superintendent, National Fuel Co., Denver, Colo.

The Puritan mine, which is owned by the National Fuel Co., is located on the Union Pacific R.R., 26 miles northeast of Denver. The mine is equipped as follows: A three-track tippie; three track scales each 74 ft. long; self-dumping cages; a roller-hung shaking screen; an 18 x 36-in. first-motion hoist; six 100-hp. boilers; two 900-ft. Norwalk air compressors; a 6 x 18-ft. Crawford-McCrimmon fan, direct connected to a 75-hp. engine, and one Ottumwa and one Christy box-car loader. In case of a breakdown of either of the box-car loaders the other one can be put into immediate use.

The depth of the coal below the surface is 100 ft. The hoisting shaft, which is the upcast, has two hoisting compartments each 5 ft. 10 in. by 7 ft. 6 in., and one ladderway and pipe compartment 3 ft. by 7 ft. 6 in. The air shaft is 8 x 8 ft. in the clear.

The coal averages 10 ft. in thickness. This allows of leaving at least 3 ft. of top coal in all the entries, thus eliminating the expense of timbering and the cost incident to entry maintenance.

The mine is developed by a pair of main entries extending east and west. These lie directly under the railroad tracks, so that the main entry pillars protect both the main entries and the railroad track.

From the main east and west entries sets of three cross-entries are turned both north and south, directly opposite each other, and driven to the boundary before any coal is extracted from the rooms.

The middle entry of the three is an air course for each of the room entries on either side, giving to each of the entries its individual split of air. By means of overcasts the air is conducted to all parts of the mine without doors. This eliminates the expense of trappers and facilitates haulage and ventilation.

The main east and west entries are driven in the lowest portion of the bed, so that each set of cross-entries both north and south are driven to the rise with a grade of $\frac{1}{2}$ per cent. in favor of the loads. This makes the conditions affecting haulage and drainage almost perfect.

The coal is mined by 10 Ingersoll H-7 puncher machines. The entire overburden consists of soapstone, which is easily broken. This consequently facilitates pillar extraction.

All entries and rooms are driven on sights. Rooms are driven 20 ft. wide with 20-ft. pillars. The cross-entries have a 25-ft. pillar between the room entries and the air course. Room entries and main entries are driven 10 ft. wide, and the air course 15 ft. wide, giving ample cross-sectional area and eliminating the expense incident to narrow work. Roomnecks are driven 20 ft. long.

On account of the ease with which the overburden is broken, nearly all the pillar coal is mined by machine. Rooms are driven 250 ft. in length. They are then cut through at the face by 20-ft. crosscuts. A 6-ft. stump is then left as a support, and another 20-ft. cut is made across the pillar. This 6-ft. stump acts as a protection to the men working the pillar and also holds back the overburden which has fallen on account of the pillar being withdrawn on the previous cut. The 6-ft. stump is then removed by hand.

It has been found that two crossbars set opposite this stump across the full width of the room act as a breaker, in addition to giving protection to the men working on the pillars.

The degree of extraction at the Puritan mine for the past eight years has averaged over 90 per cent. Ten per cent. is lost in top coal in rooms and pillars.

The output of the mine at the present time averages over 1100 tons a day. All of this coal is hauled by 13 drivers and 18 mules. On Jan. 24, last, the day on which the Rocky Mountain Coal Mining Institute visited the mine, 1130 tons of coal was produced.

The coal bed contains no impurities of any kind, and since the mine was opened in 1908 not a single car of rock has been handled. Analyses show this coal to be the lowest in ash of any in the state—namely, 3.8 per cent.

On account of the method of working—that is, driving entries to the boundary before room extraction is started—and the ideal physical conditions, the cost of production at this property is practically uniform and is influenced only by increases in wages.

Convention of Purchasing Agents

From the standpoint of practical analysis of business conditions and consequent suggestions for the shaping of a course to meet extraordinary conditions yet to come, the Annual Congress of the National Association of Purchasing Agents, to be held in Pittsburgh, Oct. 9, 10 and 11, is taking on an importance which is impressing itself nationally.

The details of the convention are being worked out by Robert F. Blair, of the Pittsburgh Gage and Supply Co., who is chairman of the Convention Committee. E. L. McGrew, of the Standard Underground Cable Co., is the National Association's president.

The registration of delegates will take place on Oct. 9, at the William Penn Hotel, which will be the headquarters for the convention, and where also the convention meetings, both public and closed, will be held, and where the annual banquet will take place.

Location and Construction of Mine Tracks—VI

By J. McCrystle
Minersville, Penn.

SYNOPSIS—The standardization of switches and turnouts results in many economies. Cast frogs, unless shrouded, are unsatisfactory. The gap of frogs should be made as small as possible.

THE standardization of turnout equipment furnishes a fertile field for improvement; both time and equipment can be economized and at the same time better results obtained.

In the preparation of standards, every effort should be made to achieve simplicity—the adoption of three or four different numbered frogs with possibly two switches of different lengths that can be installed to suit most conditions, if a little forethought is used in laying out the work, will be found ample.

The use of a frog of a certain number for chamber work, another for general cases other than the chambers, and a third for locations subject to heavy traffic

While frogs are sometimes lettered or numbered arbitrarily, the generally accepted practice is to designate the frog by the number found by dividing the length by

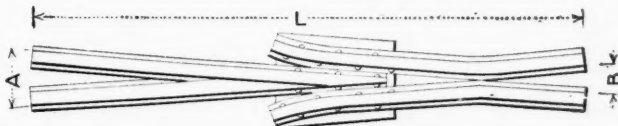


FIG. 15. TO DETERMINE ANGLE OF FROG

the spread; that is, the frog number is the ratio of the length to the spread. Thus, referring to Fig. 15:

Let

- L = Double or entire length of the frog;
- A = Spread between gage side of rails at one end of the frog;
- B = Spread between gage side of rails at the other end of the frog.

Then the frog number equals $\frac{L}{A+B}$ or the frog number equals $\frac{L}{A}$.

If L is measured in inches, then A and B should be in inches; and similarly, if L is in feet, A and B should be in feet.

The use of the cast frog is not to be recommended with locomotive haulage, and even with mule haulage and light rail it should be restricted to chamber or room work. While the initial cost of the cast frog is less than for the built-up frog, it will not wear as well; the point breaks off or wears down in a short time; it does not permit an efficient connection with the rails; it wears down quickly and contributes to many derailments.

Many companies require the face of such frogs to be chilled in order to increase the wearing qualities. Fig. 16 shows a shrouded cast frog; the shrouded type being found much superior to the ordinary casting in the pre-

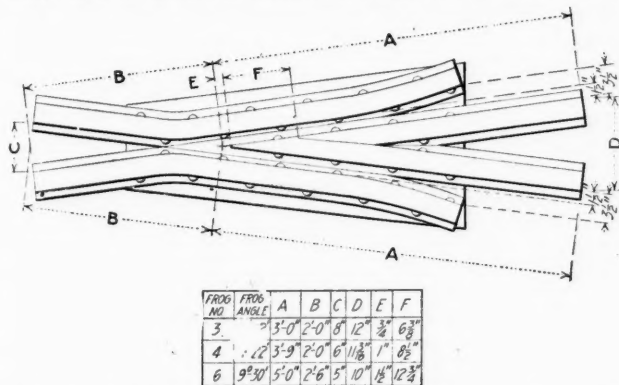


FIG. 14. TYPICAL PLATE FROG OF UNIFORM LENGTH FOR VARYING WEIGHTS OF RAIL

and high velocity will be sufficient except for special cases.

Plate frogs should be designed so they can be made, should the necessity arise, at the colliery blacksmith shop, although ordinarily it will be found advisable to purchase such frogs from a manufacturer who specializes in this kind of equipment. The reasons for this latter choice are, of course, obvious.

ONE STANDARD LAYOUT FOR MINES EMPLOYING RAILS OF VARIOUS WEIGHTS

If the mine employs various weights of rail, by designing a certain number of frogs the same length for the different weights, the one turnout standard will apply. This will also permit in an emergency the replacing or temporary installation of any frog of a certain number with rail of different weights. With this idea in view, a No. 4 frog would be the same length, whether made of 30-, 40- or 60-lb. rail.

Fig. 14 shows a typical frog design for a No. 3, 4 or 6 frog to be used with any weight rail up to and including 60 lb. per yard. The length of the frog must be sufficient to permit the easy application of the angle bars.

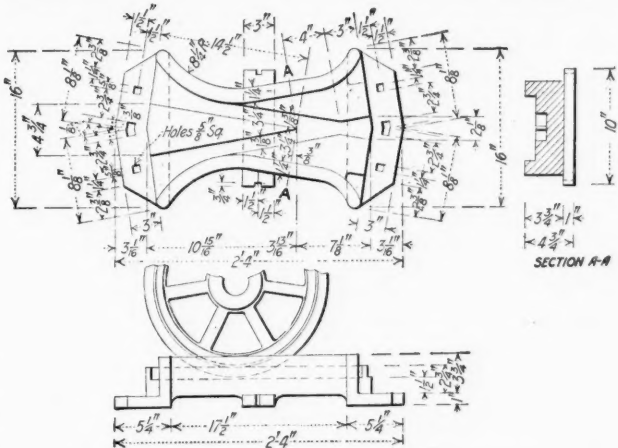


FIG. 16. PLAN OF SHROUDED CAST FROG

vention of derailments. The shroud precludes the possibility of the flange hitting the frog point or taking the wrong flange channel when passing from the throat of the frog. It will be noted that the shroud is cast about

1 in. higher than the frog, and at such a distance from the gage lines that the shroud engages the outside of the wheel tread a short distance before the point is reached.

The use of the usual guard rail on the inner side of the opposite rail is not so positive in its action as the shroud even for wheels tight on the axles, and with the play common to wheels loose, on the axles, the guard rail is extremely unreliable. Moreover, the shroud is cheaper and easier to install than the guards.

A similar shroud has been found satisfactory with the plate or built-up frog, particularly with the long throats of those of a larger number.

If the tread of the locomotive is the same as that of the cars, the shroud is riveted to the plate; otherwise, the shroud is held in the position required for the cars by a spring, which the locomotive pushes back when passing. It will be noted that one spring will serve for either a single or double shroud.

Fig. 17 is a plan of a shroud built of ordinary tee rail, the elasticity of the rail composing the shroud maintaining it in position.

In designing either plate or cast frogs, the flange channels should be made as narrow as the flanges of the wheels will permit. There are two objections to a wide flangeway: First, the diameter of the wheels of mine cars is comparatively small, so that instead of spanning the gap between the point and the wing they drop partly into it, jarring the cars and wearing out the frog; second, the wider the flangeway the longer will be the "throat" of the frog—that is, the distance between the point and the "wing"—and the wheels in traveling over the throat, especially of the frogs of large number, are more liable to depart from their proper course and derail the car by striking the frog point or by taking the wrong flangeway. As stated before, the guard rail placed near the opposite rail cannot be depended upon when the cars have loose wheels. The short length of mine frogs does not adapt them for having one wing on a spring, as may be the case on standard-gage tracks; and furthermore, wheels loose on the axle would not operate a spring frog.

Fig. 18 shows a form of frog built to avoid the gap in the usual type. It is generally connected with the switch lever, so that whichever way the switch is set the frog will be in proper relation. The tongue is held by a pin which allows it to swing to fit either

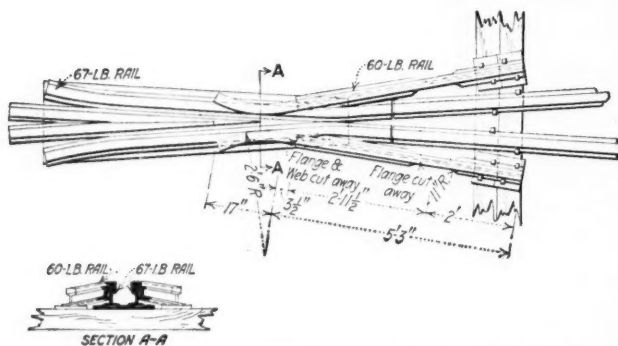


FIG. 17. PLAN OF SPRING-RAIL SHROUD FROG

of the rails. About 3 in. are left between the ends of the rails—the tongue is made sufficiently long to reach from the frog point and make a close joint with the ends of the rails.

This arrangement has been found to work well in preventing derailments where cars are pushed. On switches where the cars run always in one direction (*E* to *F* in the figure), the cars themselves set the

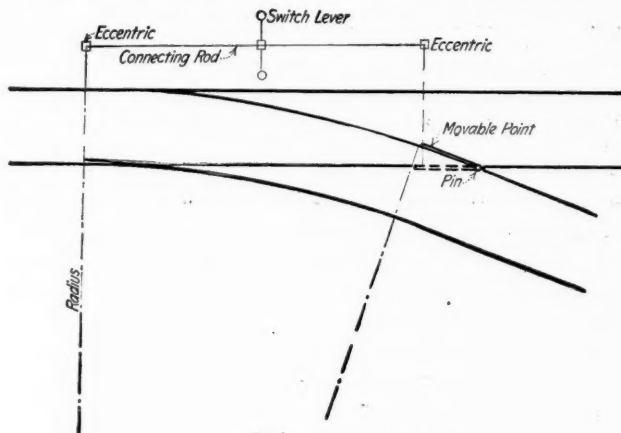


FIG. 18. MOVABLE POINT FROG

frog point. This movable frog point will usually outlast the ordinary type.

In frogs for crossings over other tracks, the flange-ways should be made as narrow as the mine cars will permit. If the mine cars are equipped with wheels which run loose on the axle, the angle of the crossing, if possible, should not be less than 10 deg.; otherwise, derailments may occur when passing through the frogs toward the point.

SPLIT SWITCHES AND LATCHES

The length of the switch point should be in conformity with the radius of the turnout curve and the speed and character of the traffic.

The tapered end of the switch is known as the point; the blunt end, the heel. The switch made of tee rail is termed a split switch; that made of a bar of iron which turns on a pin near its heel is known as a latch. Switch points are designated right and left hand and are not interchangeable, the right and left hand being determined by standing at the switch point and facing toward the frog. When ordering a single switch point, its position, right or left, must be given. No distinction is necessary with latches as they can be reversed and used for either side.

Split switches for mine work should be straight, not curved, so that any pair of mated switch points can be used on a right- or left-hand turnout. When light rail switch points are curved, they frequently break a short distance from the point.

The split switch is usually longer than the latch and is operated by a lever. It thereby makes a more efficient bearing against the rail and affords a smoother haulage than does the latch. It is known as a rigid split switch when used without a spring, and as a spring switch when a spring is employed. The spring makes the switch automatic and is profitably used at turnouts when the traffic is in one direction. For ordinary use underground, the spring, if not properly cared for, clogs with mud and is no better than the rigid switch. The bolts attaching the rods connecting the switch points should be sufficiently low so that when the tread of the motor wheels are well worn the flange

will not cut the bolts. It is often advisable to attach the connecting-rods to the flange of the switch points rather than to the web.

The latches in general use on mine tracks run from 2 to 5 ft. in length and the split switches from 5 to 10 ft. Due to its easy and cheap installation, the latch is much used for mule haulage and chamber work.

The use of the stub switch has been limited around mines. It is assumed that it is a simple curve from the point of the stub to the point of frog; the lead being found by multiplying twice the gage by the number of the frog and the radius by multiplying twice the gage by the frog number squared. For example: If the frog is a No. 3 and the gage $3\frac{1}{2}$ ft., the lead is 21 ft. and the radius 63 feet.

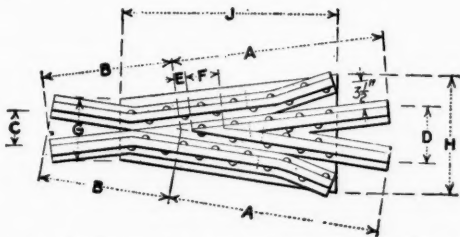


FIG. 19. DIMENSIONS OF PLATE FROG OF 25- TO 60-LB. RAIL

The following table gives the angles corresponding to the various length switches and frogs:

Frog No.	Frog Angle		Split Switch Lengths, Ft.	Switch Angle for 5-In. Throw; Switch, $\frac{1}{4}$ In. At Point.	
	Deg.	Min.		Deg.	Min.
1 $\frac{1}{2}$	33	12	5	4	32
2	28	56	5 $\frac{1}{2}$	4	08
2 $\frac{1}{2}$	23	04	6	3	47
3	19	12	6 $\frac{1}{2}$	3	27
3 $\frac{1}{2}$	16	25	7	3	15
4	14	22	7 $\frac{1}{2}$	3	01
4 $\frac{1}{2}$	12	46	8	2	50
5	11	30	9	2	31
5 $\frac{1}{2}$	10	26	10	2	16
6	9	34	...	...	...
7	8	10	...	...	...
8	7	09	...	...	...

The accompanying tables give dimensions for frogs from No. 3 to 5 $\frac{1}{2}$ for rail from 25- to 60-lb. weight per yard:

STANDARD RIVETED PLATE FROGS FOR 25-LB. RAIL

Frog No.	Frog Angle		Space Between Heads of Rail	Diameter of Rivets	Plate										Thickness
	Deg.	Min.	In.	In.	A	B	C	D	E	F	G	H	I	J	
3	19	12	1 $\frac{1}{2}$	1 $\frac{1}{2}$	0 21	15 5	7	3 $\frac{1}{2}$	9 16	0 24	9 16	0 24	9 16	0 24	1 $\frac{1}{2}$
3 $\frac{1}{2}$	16	25	1 $\frac{1}{2}$	1 $\frac{1}{2}$	0 24	15 4 $\frac{1}{2}$	6 $\frac{1}{2}$	4 $\frac{1}{2}$	9 16	0 24	9 16	0 24	9 16	0 24	1 $\frac{1}{2}$
4	14	22	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 3	18 4 $\frac{1}{2}$	6 $\frac{1}{2}$	1	9 16	2 6	9 16	2 6	9 16	2 6	1 $\frac{1}{2}$
4 $\frac{1}{2}$	12	46	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 3	18 4	6	1 $\frac{1}{2}$	9 16	2 6	9 16	2 6	9 16	2 6	1 $\frac{1}{2}$
5	11	30	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 6	18 3 $\frac{1}{2}$	6	1 $\frac{1}{2}$	9 16	3 0	9 16	3 0	9 16	3 0	1 $\frac{1}{2}$
5 $\frac{1}{2}$	10	26	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 9	21 3 $\frac{1}{2}$	6	1 $\frac{1}{2}$	9 16	3 6	9 16	3 6	9 16	3 6	1 $\frac{1}{2}$

STANDARD RIVETED PLATE FROGS FOR 30-LB. RAIL

Frog No.	Frog Angle		Space Between Heads of Rail	Diameter of Rivets	Plate										Thickness
	Deg.	Min.	In.	In.	A	B	C	D	E	F	G	H	I	J	
3	19	12	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 3	18 6	9	4 $\frac{1}{2}$	9 16	0 24	9 16	0 24	9 16	0 24	1 $\frac{1}{2}$
3 $\frac{1}{2}$	16	25	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 6	21 6	8 $\frac{1}{2}$	4 $\frac{1}{2}$	9 16	0 24	9 16	0 24	9 16	0 24	1 $\frac{1}{2}$
4	14	22	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 0	21 5 $\frac{1}{2}$	8 $\frac{1}{2}$	1	9 16	2 6	9 16	2 6	9 16	2 6	1 $\frac{1}{2}$
4 $\frac{1}{2}$	12	46	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 3	24 5 $\frac{1}{2}$	8 $\frac{1}{2}$	1 $\frac{1}{2}$	9 16	2 6	9 16	2 6	9 16	2 6	1 $\frac{1}{2}$
5	11	30	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 3	24 4 $\frac{1}{2}$	7 $\frac{1}{2}$	1 $\frac{1}{2}$	9 16	3 0	9 16	3 0	9 16	3 0	1 $\frac{1}{2}$
5 $\frac{1}{2}$	10	26	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 6	24 4	7 $\frac{1}{2}$	1 $\frac{1}{2}$	9 16	3 6	9 16	3 6	9 16	3 6	1 $\frac{1}{2}$

STANDARD RIVETED PLATE FROGS FOR 40-LB. RAIL

Frog No.	Frog Angle		Space Between Heads of Rail	Diameter of Rivets	Plate										Thickness
	Deg.	Min.	In.	In.	A	B	C	D	E	F	G	H	I	J	
3	19	12	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 9	0 24	7	11	4 $\frac{1}{2}$	9 16	0 24	9 16	0 24	9 16	0 24
3 $\frac{1}{2}$	16	25	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 0	0 24	6 $\frac{1}{2}$	10 $\frac{1}{2}$	5 $\frac{1}{2}$	9 16	0 24	9 16	0 24	9 16	0 24
4	14	22	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 3	0 24	6	9 $\frac{1}{2}$	6 $\frac{1}{2}$	9 16	2 6	9 16	2 6	9 16	2 6
4 $\frac{1}{2}$	12	46	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 6	2 3	6	9 $\frac{1}{2}$	7 $\frac{1}{2}$	9 16	2 6	9 16	2 6	9 16	2 6
5	11	30	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 9	2 3	5 $\frac{1}{2}$	9 $\frac{1}{2}$	8 $\frac{1}{2}$	9 16	3 0	9 16	3 0	9 16	3 0
5 $\frac{1}{2}$	10	26	1 $\frac{1}{2}$	1 $\frac{1}{2}$	4 0	2 3	4 $\frac{1}{2}$	9 $\frac{1}{2}$	9	9 16	3 6	9 16	3 6	9 16	3 6

STANDARD RIVETED PLATE FROGS FOR 45-LB. RAIL

Frog No.	Frog Angle		Space Between Heads of Rail	Diameter of Rivets	Plate										Thickness
	Deg.	Min.	In.	In.	A	B	C	D	E	F	G	H	I	J	
3	19	12	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 9	0 24	8	11	5 $\frac{1}{2}$	10 18	2 6	10 18	2 6	10 18	2 6
3 $\frac{1}{2}$	16	25	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 0	0 24	6 $\frac{1}{2}$	10 $\frac{1}{2}$	6 $\frac{1}{2}$	10 18	2 6	10 18	2 6	10 18	2 6
4	14	22	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 5	0 24	6	10 $\frac{1}{2}$	7	10 18	3 0	10 18	3 0	10 18	3 0
4 $\frac{1}{2}$	12	46	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 9	2 3	6	10	7 $\frac{1}{2}$	10 18	3 6	10 18	3 6	10 18	3 6
5	11	30	1 $\frac{1}{2}$	1 $\frac{1}{2}$	4 0	2 3	5 $\frac{1}{2}$	9 $\frac{1}{2}$	8 $\frac{1}{2}$	10 18	3 6	10 18	3 6	10 18	3 6
5 $\frac{1}{2}$	10	26	1 $\frac{1}{2}$	1 $\frac{1}{2}$	4 3	2 3	4 $\frac{1}{2}$	9 $\frac{1}{2}$	9	10 18	4 0	10 18	4 0	10 18	4 0

STANDARD RIVETED PLATE FROGS FOR 50-LB. RAIL

Frog No.	Frog Angle		Space Between Heads of Rail	Diameter of Rivets	Plate										Thickness
	Deg.	Min.	In.	In.	A	B	C	D	E	F	G	H	I	J	
3	19	12	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 0	0 24	8	12	5 $\frac{1}{2}$	16 20	2 6	16 20	2 6	16 20	2 6
3 $\frac{1}{2}$	16	25	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 3	0 24	6 $\frac{1}{2}$	11 $\frac{1}{2}$	6 $\frac{1}{2}$	16 20	2 6	16 20	2 6	16 20	2 6
4	14	22	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 6	0 24	6	10 $\frac{1}{2}$	7	16 20	3 0	16 20	3 0	16 20	3 0
4 $\frac{1}{2}$	12	46	1 $\frac{1}{2}$	1 $\frac{1}{2}$	3 9	2 3	6	10	7 $\frac{1}{2}$	16 20	3 6	16 20	3 6	16 20	3 6
5	11	30	1 $\frac{1}{2}$	1 $\frac{1}{2}$	4 0	2 3	5 $\frac{1}{2}$	9 $\frac{1}{2}$	8 $\frac{1}{2}$	16 20	3 6	16 20	3 6	16 20	3 6
5 $\frac{1}{2}$	10	26	1 $\frac{1}{2}$	1 $\frac{1}{2}$	4 3	2 3	4 $\frac{1}{2}$	9 $\frac{1}{2}$	9	16 20	4 0	16 20	4 0	16 20	4 0

STANDARD RIVETED PLATE FROGS FOR 60-LB. RAIL

Frog No.	Frog Angle		Space Between Heads of Rail	Diameter of Rivets	Plate										Thickness
	Deg.	Min.	In.	In.	A	B	C	D	E	F	G	H	I	J	
3	19	12	2	2	3 0	0 24	8	12	6 $\frac{1}{2}$	10 20	2 6	10 20	2 6	10 20	2 6
3 $\frac{1}{2}$	16	25	2	2	3 6	0 24	6 $\frac{1}{2}$	12	7 $\frac{1}{2}$	10 20	2 6	10 20	2 6	10 20	2 6
4	14	22	2	2	3 9	0 24	6	11 $\frac{1}{2}$	8 $\frac{1}{2}$	10 20	3 0	10 20	3 0	10 20	3 0
4 $\frac{1}{2}$	12	46	2	2	4 0	2 3	6	10 $\frac{1}{2}$	9 $\frac{1}{2}$	10 20	3 6	10 20	3 6	10 20	3 6
5	11	30	2	2	4 3	2 3	5 $\frac{1}{2}$	10 $\frac{1}{2}$	10 $\frac{1}{2}$	10 20	3 6	10 20	3 6	10 20	3 6
5 $\frac{1}{2}$	10	26	2	2	4 9	2 6	5 $\frac{1}{2}$	10 $\frac{1}{2}$	11 $\frac{1}{2}$	10 20	4 0	10 20	4 0	10 20	4 0

NOTE: Rivets to be countersunk on bottom side of bottom plate; frogs to be drilled for standard splice bars.

(To be continued)

Binders for Briquetting Coals

The binders for briquetting coal may be classified by their deficiencies as follows: Too weak—naphthalene, true petroleum and ordinary or portland cement when in such quantities as is customary; too costly—asphalt (except in the vicinities where it is found), true petroleum, carrageen (or pearl) moss, paper pulp, resin salts or soaps, milk of lime and water glass, also starch paste of flour, ground oilcake, potato meal or other farinaceous materials, all of which are too expensive for use except where spoiled flour is used, and the supply of this is uncertain; not sufficiently resistant to weather—carrageen moss, molasses, paper pulp, cell pitch and clay; makes too much ash—magnesia (or Sorel) cement, lime and hydraulic gypsum; too slow setting—ordinary or portland cement; too weak in the fire—resin. This classification is based on Franke's "Handbook of Briquetting." Among the best binders are apparently pitch, sulphite cellulose liquors and resin.

Apportioning Car Shortages

By A. L. H. STREET

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In the panel on this page is reproduced a letter addressed to "Coal Age" by the president of a large coal-producing company. As the facts therein contained are of vital importance to the industry, we publish herewith the answer made by our legal department.

IN CONSIDERING this interesting and important question, we start with the general principle declared by the United States Supreme Court that although ordinarily a shipper, on reasonable demand, is entitled to all the cars he can promptly load, the right is not absolute, and a carrier is not liable for failure to supply cars as the result of sudden and great demand which it had no reason to apprehend. But, in case of car shortage, a carrier is bound to treat shippers fairly if not identically. (*Pennsylvania Railroad vs. Puritan Coal Co.*, 237 U. S. 121.) The cited decision is also authority on the further point here pertinent, that the fairness of an interstate carrier's rules governing car distribution is a matter primarily to be determined by the Interstate Commerce Commission.

The Kentucky Court of Appeals seems to announce a well-settled rule of law by holding that a carrier is bound to provide itself with facilities for handling all coal that may reasonably be expected to be tendered; and that the fact that a railway company may have sufficient cars to meet the demands of the coal trade, if such demands should be equally distributed throughout the months of a given year, does not show discharge of the carrier's obligation to maintain adequate facilities. The court holds that a carrier must have an adequate car supply to meet the demands of the trade during the busy months, although its supply may be greatly more than is needed during dull months. (*Illinois Central Railroad Co. vs. River and Rail Coal and Coke Co.*, 150 Ky. 489.)

Apparently, the Interstate Commerce Commission decision referred to by our correspondent is that announced in the Matter of Irregularities in Mine Ratings, 25 I. C. C. 286, wherein it was held that the ratings of mines should be based upon their several hourly capacities for production; that mines with an outlet

by river should be treated as junction-point mines; that upon days for which the junction-point mine orders no cars from another carrier it should have its full rating on a particular road; that upon a day for which it orders cars from one other carrier its rating on the particular road should be 75 per cent. of its full rating; and that upon a day for which it orders cars from two other carriers its rating on the Illinois Central for that day shall be 50 per cent. of its full rating. The Commission said:

The junction-point mine has available a more extensive and more varied market for its coal. It may at times be able to dispose of its product upon the second line of railroad, while the mine local to the first road is unable to market its output. In case of car shortage the junction-point mine is able to select the outlet which affords the best and most liberal means of transportation. These are important advantages to which the junction-point mine is entitled and in the reasonable enjoyment of which it should be protected.

If the carrier is unable to supply all of the equipment desired by the mines which it serves, it becomes necessary to place some restriction upon all of them, and in order to do this impartially the practice of rating the mines and of distributing the available equipment pro rata on the basis of such ratings has been adopted. It is a practice in connection with the movement of interstate traffic which is within the jurisdiction of the commission as to its reasonableness and its discriminatory effect, if any. It should therefore be viewed from every angle and in all of its details, with the purpose of ascertaining its ultimate effect. If unreasonableness or unjust discrimination is found, we have the power and it is our duty to correct the fault.

The junction-point mine has a right to ship its output via either of the lines serving it. It may on any day tender its entire output to either of such lines and is entitled to its share of the available equipment on that basis. But it should not be permitted to tender its full capacity to each of two or more roads on the same day and thus obtain cars from each of the roads on the theory that it has ready for shipment via each road the total capacity of its mine.

Having the right to assert its full capacity against the Illinois Central on any day, it follows that the junction-point mine must have a rating on the Illinois Central equal to its full capacity or it would not be able to secure its quota of the available cars on that day when it elects to assert its full capacity against that line.

Manifestly there ought to be uniformity in ratings and in the rules of car distribution to junction mines in a given territory. Reference to the mine-rating rules of the principal carriers that serve the junction-point mines here considered shows that no two of them have the same ratings or rules.

Each of the lines serving the junction-point mine would be obliged to count against its distributive share all pri-

Letter from the President of a Large Coal Company to Coal Age

We are desirous of obtaining information as to the legal obligation of railroads in the matter of furnishing cars to coal mines where some of the mines are served by their tracks exclusively, and others in the same district are served by the rails of as many as three railroads. We have been told that the Interstate Commerce Commission has rendered an opinion to the effect that in the case of mines served by more than one railroad the mine should be rated for car distributions as follows: Where served by one railroad, 100 per cent. of capacity; where served by three railroads should be rated by each railroad at 50 per cent. capacity.

However, it has been stated by the same authority that the spirit and intent is that each mine in a given coal district should be afforded the opportunity to run the same number of hours per week, regardless of whether it is served by the rails of one road or the rails of three roads.

Our understanding is that, strictly speaking, the law placed upon each carrier the obligation to furnish each coal mine or shipper a 100 per cent. car supply. But I assume that under abnormal conditions now prevailing such law should be generously interpreted, and that about all a mine operator could demand is an absolutely impartial distribution of the available equipment of each railroad. And, therefore, the question we are trying to determine is what would be a legal or at least a fair and impartial basis of distribution where one of several mines on a given line of railroad is served by that line only, and other mines are served not only by that railroad but by two additional roads.

vately owned or specially consigned cars. It seems therefore that in order to avoid unjust discrimination in the distribution of cars, some consideration must be given to the cars which the junction-point mine receives from another road.

The junction-point mine having been accorded a rating equal to its full capacity, which protects its right to assert that full capacity against the Illinois Central on any day, it is necessary in order to avoid unjust discrimination in its favor as compared with the local mine to somewhat limit its power to assert that capacity against two or more carriers at the same time. This might perhaps be done by deducting from its rating capacity for purposes of distribution on that day the tonnage for which it is furnished cars by another carrier or other carriers, but if that is fair and reasonable as to one carrier it must be equally so as to the other carriers which serve the same mine, and the difficult question would be raised as to which of them should suffer a shrinkage in its allotment because the other had furnished cars.

It might be apportioned in alternate weeks or on alternate days if the mine operators were able to know from week to week or from day to day just what shipments they would desire to make over each road or what cars would be available. The difficulty is that in periods of car shortage the mine presumably has more orders than it can fill. It desires to fill some in preference to others and is obliged to regulate its shipments, therefore, according to the number of cars furnished.

It seems more practicable and reasonable to determine the distribution to the junction-point mine as compared with the local mine upon a percentage basis which we think can be fairly fixed without ignoring or unjustly circumscribing the natural advantages or the rights of either the junction-point or the local mine.

It would be unjustly discriminatory in favor of the junction-point mine and unduly prejudicial to the local mine for respondent to give the junction-point mine cars based upon its full capacity on days for which it ordered cars for part of its output from other roads. It would be unjustly discriminatory against the junction-point mine not to give reasonable recognition to its advantages of location.

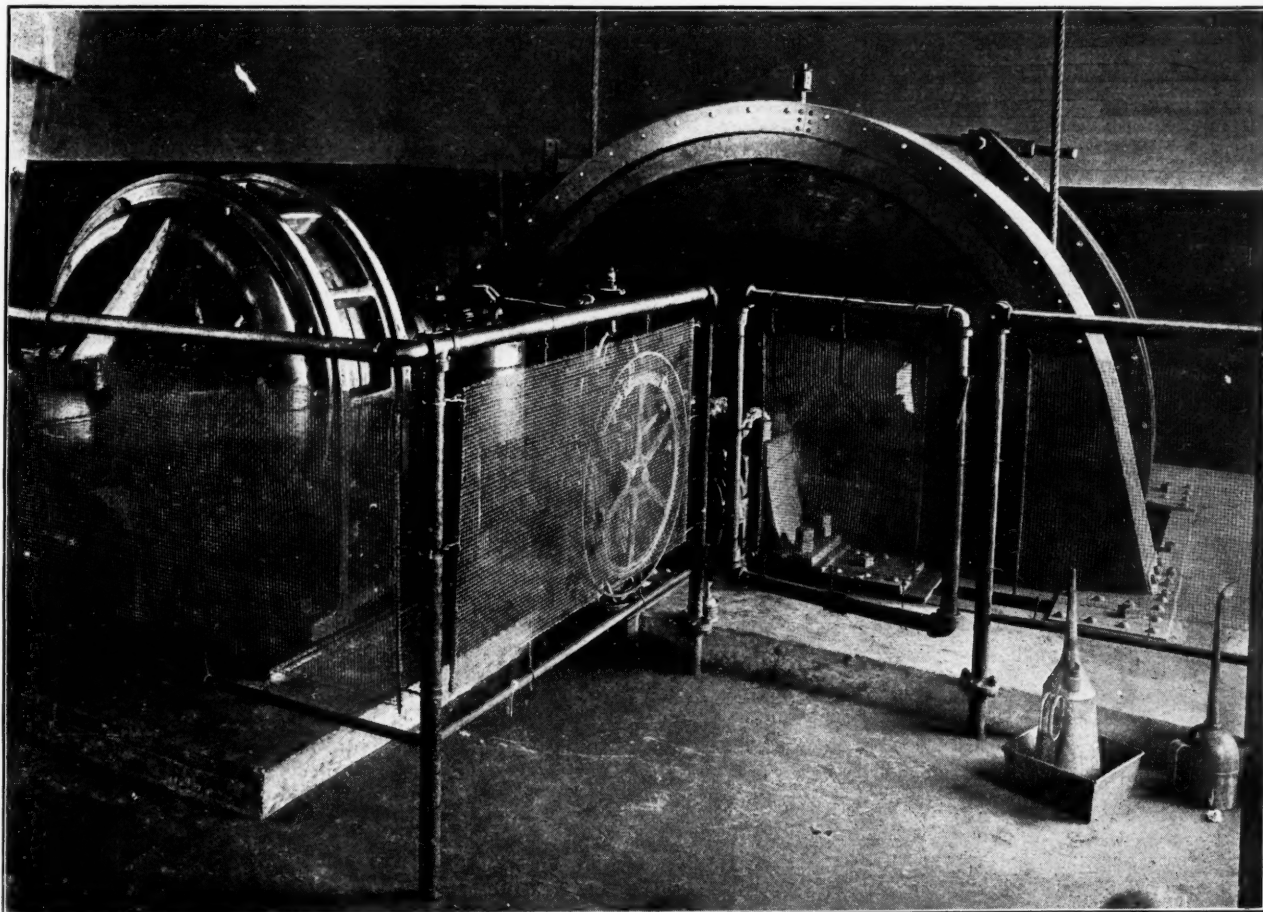
Then follows the Commission's decision for prorating cars in Illinois Central R.R. territory on the basis of 100 per cent., 75 per cent., and 50 per cent., respectively, according to whether no cars are ordered on a given day from another carrier, or whether cars are ordered from one other carrier, or from two others.

This decision seems to indicate the true rule applicable to cases of this kind—that, as against local mines, apportionment of a particular carrier's cars to a junction-point mine must be made on a reasonable basis, taking into account cars received from other roads. But it is to be remembered that, as has been recognized by the Commission, any basis adopted for a given locality must rest upon the reasonableness of its application there, rather than upon any precedent laid down elsewhere.

A Successful Hoist

In the July 21 issue of *Coal Age*, on page 98, there appears a description of the hoist illustrated below. This machine is installed at the No. 3 shaft of the Morrisdale Coal Co. in Pennsylvania. The mine is a 50-year-old operation, and this hoist is one unit of equipment that has certainly made good.

The hoist is operated from the top of the tippie, where the engineer can watch the landing and dumping of the cages. It is controlled entirely by the master controller and one brake lever. Overwinding and overspeeding are prevented by a Welch safety controller. It is interesting to note how the hoist is inclosed with wire netting for the furtherance of safety.



LIDGERWOOD HOIST AT NO. 3 SHAFT OF MORRISDALE COAL CO., MORRISDALE, PENN.

Coal Mining Investigations—IV

SYNOPSIS—*This installment concludes the account of the research work conducted by the Bureau of Mines. Explosives, and the different tests and the apparatus used to determine permissibility are described. Electric cap lamps and the changes in haulage equipment are also treated.*

GASEOUS products from firing a charge of an explosive are determined by chemical analysis. A charge of explosive is fired in a Bichel pressure gage. The charge is 200 grams of explosive contained in an amount of original wrapper that is proportional to the largest amount per 100 grams of explosive of all the different sizes of that explosive submitted for test. By means of a No. 7 electric detonator inserted into one end, the cartridge is fired after the gage has been closed and the air exhausted from it. The gases evolved by the explosion are allowed to cool for 30 minutes. After the pressure has been recorded, a differential sample of the gases is drawn from the gage and analyzed. If any poisonous gas is present, it is usually carbon monoxide or hydrogen sulphide. The total volume of

(1½ lb.) of the explosive does not exceed 158 liters (5½ cu.ft.) at standard temperature and pressure (0 deg. C. and 760 millimeters).

If an explosive that did not fulfill the foregoing requirement were used in a narrow coal-mine entry driven ahead of the ventilating current, the air might be so vitiated with poisonous gases as to injure the miner.

PENDULUM FRICTION DEVICE

A pendulum friction device is used for testing the sensitiveness of explosives to frictional impact or a glancing blow. Serious accidents have occurred in charging drill holes with explosives too sensitive to such impact. Tests at the Pittsburgh experiment station have shown that some explosives made from mixtures containing chlorate of potash and carbonaceous combustible materials explode under this test.

These chlorate of potash explosives have many properties making them desirable for use in coal mines; as for example, a slow rate of burning and a heaving effect suitable for the production of lump coal. It would seem, therefore, that there is an opportunity for some manufacturer to produce an explosive of this class that is not sensitive to frictional impact.

An explosive is considered as having passed this test if no explosion, burning or local cracking occurs in any one of 10 trials. In each trial a 7-gram charge of the explosive spread on a grooved solid steel plate is struck about 18 times by a steel pendulum faced with a fiber shoe. Resting above the shoe is a 20-kg. weight. The pendulum drops 1.5 meters.

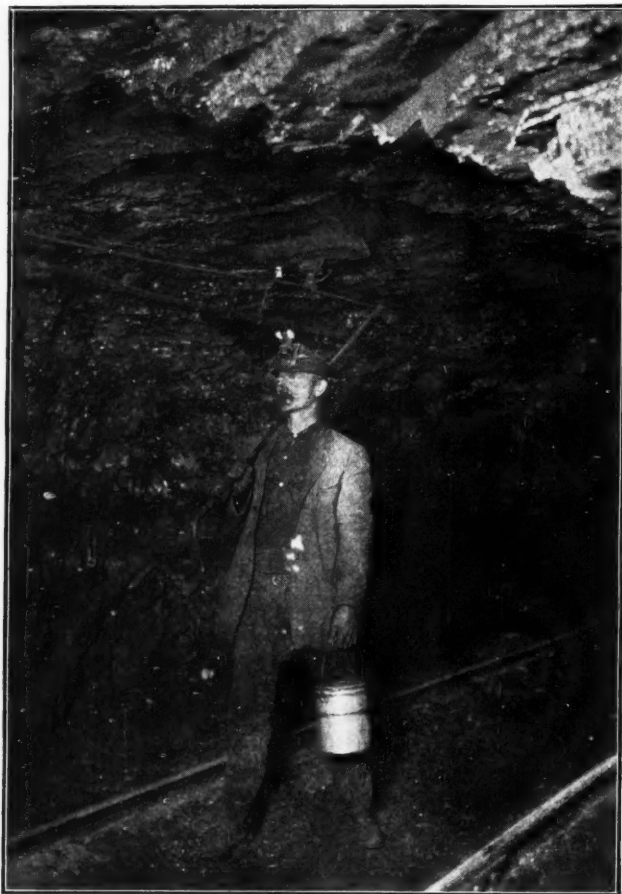
A crusher-board test is made of explosives, denominated low-freezing, extra low-freezing or nonfreezing. This test gives the compressive strength of cartridges that have been brought up to room temperature, as compared with the compressive strength of cartridges that have been kept at a low temperature for several hours. Explosives denominated "low-freezing" are kept at 35 deg. F.; those denominated "extra low-freezing," at 0 deg. F.; and those denominated "non-freezing" are kept at still lower temperatures.

STORAGE TEST TO DETERMINE PERMISSIBILITY

The two-months' storage test is the final test made in determining permissibility. For an explosive to pass this test two or more cartridges of the smallest diameter submitted must detonate completely when fired after two months' storage at the Pittsburgh experiment station.

In practice the test is made by firing separately five cartridges suspended in air in a gallery. Electric detonators of the grade recommended by the manufacturer are used for the tests. As these tests are considered to be more severe than those made in a cannon, no further tests are made if there is complete detonation in each of five trials.

However, if some of the cartridges fail to detonate completely, the number thus failing is noted, and the same number of fresh cartridges are fired separately in a cannon so charged that there is an air space between the stemming and the explosive; the number and the nature of the failures are noted. Fresh car-



THE WRONG WAY TO CARRY AN AUGER IN A MINE

poisonous gases from 680 grams (1½ lb.) of the explosive (the permissible charge) is then computed.

An explosive is considered to have passed this test if the total volume of poisonous gases from 680 grams

tridges equal in number to those failing are taken and separately loaded without air space and fired as before. Should there be two or more failures the explosive fails to pass the test.

The explosives that pass all of these tests for permissibility are submitted to further tests in order that the manufacturer and user may have complete information. The additional tests are made as follows:

By means of a flame test the flame from the explosive is photographed to show the length and the duration of the flame. The test is based upon the belief that the greater the length and duration of the flame of an explosive the greater the chance of such a flame igniting inflammable or explosive mixtures of gas or coal dust in a mine. Too great emphasis must not be placed on length and duration of flame as an indication of permissibility, for both the length and the duration of the flames of certain nonpermissible explosives are less than those of some of the permissible explosives, but the other variables, particularly the temperature of the flame, are of importance and must be taken into account.

EXPLOSION-BY-INFLUENCE TEST

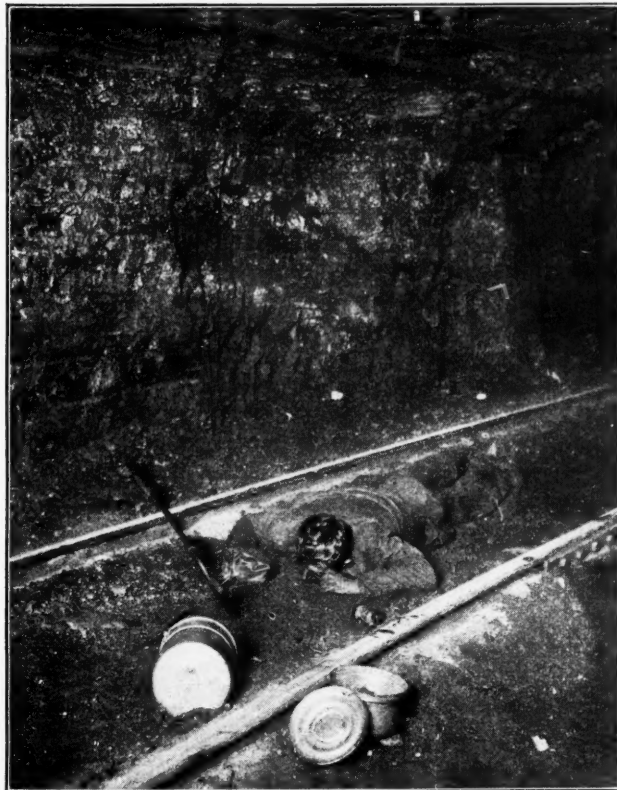
The explosion-by-influence test determines the sensibility of an explosive to the explosion wave produced by the detonation of an equal mass of the same explosive and transmitted through the air. In this test two cartridges of the same explosive are placed a predetermined distance apart. One cartridge is fired by means of an electric detonator. If the second cartridge is detonated by the detonation of the first cartridge, the test is repeated with the second cartridge farther away. If the second cartridge is not detonated, the test is repeated with the second cartridge nearer the first. By proceeding in this way, the minimum distance between cartridges at which the first cartridge does not detonate the second is established within 1 inch.

A Bichel pressure gage is used for determining the maximum theoretical pressure that could be developed in a borehole by an explosive. The essential features of this apparatus are cylinders in which the explosive is fired, instruments by which the pressure developed in these cylinders is recorded, and a device by which the heat distribution, or dissipation, is ascertained.

The apparatus actually employed consists of two stout cylinders. The chamber of one cylinder measures 19 in. (48.3 cm.) by 7.87 in. (20 cm.); the chamber of the other measures 25.25 in. (64 cm.) by 7.87 in. (20 cm.). The cylinders are made of cast steel. The heads of the cylinders are provided with lead gaskets and are secured in place by heavy stud bolts and an iron yoke. A system of sheaves and suspended counterweights is provided to aid in detaching the heavy heads from the cylinders and mounting them upon the specially designed wagons so that access may readily be had to the interiors of the cylinders.

As the air is practically excluded from a borehole in coal or rock when it is filled with a charge of explosive, these conditions must necessarily be stimulated in experimental tests. Therefore, when explosives are fired in the cylinders the air is almost entirely removed from them by a pump. The charge of ex-

plosive is placed in the gage and fired electrically, and the pressure is recorded by suitable instruments. The heat liberated by the detonation of a known weight of explosive is determined in a bomb calorimeter.



RESULT OF CARRYING AN AUGER THE WRONG WAY
Miner hits trolley wire while carrying his auger the wrong way and receives electric shock

A small lead block test determines the relative quickness of an explosive, as indicated by the compressive effect exerted by an explosive when exploded unconfined on the upper end of a small cylinder of lead. In making this test, a small steel disk placed on the lead cylinder receives the immediate impact of the detonation. The deformation of the cylinder is taken as a measure of the disruptive effect of the explosive.

TRAUZI LEAD BLOCK TEST

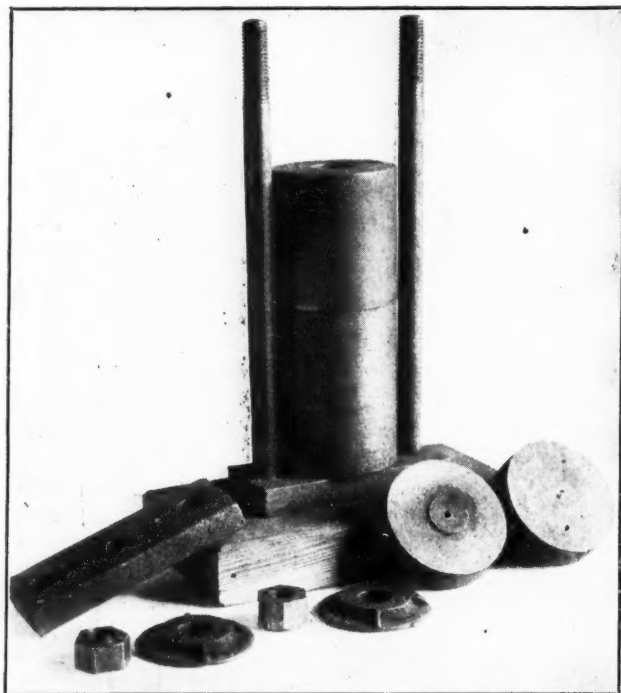
The Trauzl lead block test is designed to measure the comparative disruptive effect of explosives fired under moderate confinement. Equal weights of different explosives are confined in boreholes of definite size made in lead blocks of prescribed character by means of a fixed quantity of stemming, and, when thus confined, are exploded by means of similar detonators. The measure of the test is the volume by which the cavity in the block is enlarged by pressure exerted by the explosive.

Large and small impact machines are used in the determination of the relative sensitiveness of explosives to the impact produced by falling weights.

Suitability tests of explosives are made to determine the suitability of explosives for use in metal mines and quarries. They are the same as those for permissibility, with the following exceptions:

The ballistic pendulum test is made in duplicate, but no limits are set on the result representing the

unit defective charge. No gallery tests are made. The rate of detonation test is made in duplicate. The electric detonator used must have a strength not less than that of a No. 6 electric detonator. In the test



SAND TEST BOMB, SHOWING SEPARATE PARTS

for gaseous products of explosion the explosive is fired with an electric detonator of not less strength than that of a No. 6. When detonated in the gage the explosive to be satisfactory must not evolve poisonous gases in quantities that may be considered harmful to the health of the miners. No flame photograph is made.

TESTS OF DETONATORS

The Bureau of Mines has recently developed a method of determining the probability of detonation when a detonator is fired. An insensitive dynamite is obtained by mixing 40 per cent. "straight" nitroglycerin dynamite with varying quantities of wood pulp. The different mixtures are formed into 1½ x 8-in. cartridges. The detonator to be tested is inserted into the end of one of these cartridges, the cartridge is suspended in the air, and the detonator is fired.

Usually if three cartridges detonate completely, another mixture is used containing less nitroglycerin and more wood pulp. This procedure is continued until such a mixture is obtained that only part of the cartridges prepared therefrom detonate completely. Enough of the mixtures containing the same quantity of nitroglycerin is prepared so that at least 25 trials may be made. The number of cartridges detonating completely out of the total number of trials made with the same insensitive mixture determines the probability of detonation. The results are usually compared with the results obtained with some standard detonator tested at the same time.

Two cylindrical steel covers are provided—one with a single hole in the center for the passage of a fuse when detonators are tested, and one with two holes for electric wires used for testing electric detonators.

Another direct test for determining the strength of detonators has been designed by the engineers of the bureau, and is known as the sand test. The detonator is embedded in the center of standard 30-mesh quartz sand contained in a block of steel having a cylindrical cavity. The detonator is fired by fuse or electrically, and the quantity of sand pulverized is taken as a measure of the strength of the detonator. This test, besides being quantitative, enables an experimenter working on reinforced detonators (those in which part of the mercury fulminate or other initiating explosive is replaced by an organic nitro compound or nitrate) to determine whether complete or partial detonation has been brought about by the amount of sand crushed or by the unexploded nitrate or nitro compound found after the shot was fired. The test offers great possibilities for studying the sensitiveness to detonation of explosives and is a distinct aid to manufacturers and users of detonators.

PERMISSIBLE EXPLOSIVES AND SAFETY DEVICES

In its educational campaign for greater safety in mining, the Bureau of Mines has earnestly advocated the use of approved explosives and equipment. Too much stress cannot be placed on the need of safeguarding the 1,000,000 men employed in the mining industry in the United States.

As an example of the importance of adopting safety measures may be cited the decreased fatality rate due to explosives in bituminous coal mines in the 7-year period 1909-15 in comparison with the increased use of permissible explosives. Thus, in 1909, there were 122 fatalities due to explosives, whereas in 1915 the number had been reduced to 76, or almost 50 per cent. In 1909 the amount of permissible explosives used in coal mines was, in round figures, 9,000,000 lb., and in 1915 the amount used had reached 22,000,000 pounds. In the coal-mining district designated by the Bureau of Mines as the central district, the bureau has been making special efforts to induce the operators to adopt the use of permissible explosives. It has assigned an assistant mining engineer to the work of education and demonstration. The results in Illinois and Indiana are mentioned specifically as typical.

PERMISSIBLE EXPLOSIVES IN ILLINOIS

Permissible explosives were not introduced into Illinois until 1909. They are now being used exclusively in 20 mines, which are among the most modern in the state and represent a daily output of over 50,000 tons, employing about 9000 operatives, or approximately 11.5 per cent. of the total coal-mine employees of the state. During the fiscal year ended June 30, 1915, the number of pounds of permissible explosives reported in the Illinois coal reports as used in Illinois coal mines was 1,342,334. Approximately 7,680,000 tons of coal was produced by the use of such explosives, or 14.3 per cent. of the state total produced by all explosives.

In most of these mines black blasting powder was formerly used, but a change to permissible explosives was made to procure relief from numerous fires and explosions. Thus, in one mine 5372 fires were recorded in a 14-month period. Since the introduction of permissible explosives, fires and explosions have been prac-

tically eliminated and many other advantages have been gained, such as less injurious effects upon the roof, elimination of "blown-out" and "windy" shots, lower cost of explosive per ton of coal, and fewer accidents in handling explosives, and at the same time the sizes of coal obtained have not been materially affected. The consensus of opinion among mining men in the state is that where the coal is properly undercut and "snubbed" permissible explosives can be successfully used with little if any increase in the production of slack coal over that produced by black blasting powder.

The State of Illinois cooperated with the Bureau of Mines in the work in that state, and a report is to be published.

In Indiana, permissible explosives are used exclusively in two mines, one of which is in Sullivan County and the other in Knox County. These mines represent a total daily capacity of 5000 tons and are thoroughly modern. Permissible explosives were introduced when the screen-coal basis of payment was in force. The results obtained have been entirely satisfactory.

USE OF ELECTRIC SAFETY LAMPS

The increased use of miners' electric safety lamps has been a large factor in increasing safety in mines, particularly in decreasing the possibility of gas ignitions by open lights. Prior to the fiscal year 1916, three types of electric lamps had been given the bureau's approval, having passed the requirements for safety and practicability. Five more approvals were given during the fiscal year, two of which, however, were for lamps of almost identical design. Seven of these approvals are for cap lamps and one for a hand lamp.

The increased use of such lamps has been due in most part to the desire of companies to decrease the hazard of ignition by open lights. Prior to the development of miners' electric safety lamps there was usually great opposition to replacement of open lights by oil or gasoline safety lamps because of the great reduction in illuminating power; but the miners' electric safety lamp gives so much more light than the gasoline or oil-burning safety lamp that the old objection to replacement of open lights has been largely overcome. The scale agreement between miners and coal operators in one large coal mining district calls for installation of miners' electric lamps in gaseous mines as rapidly as the lamps can be obtained. In one state the law requires the replacement of open lights by electric lamps.

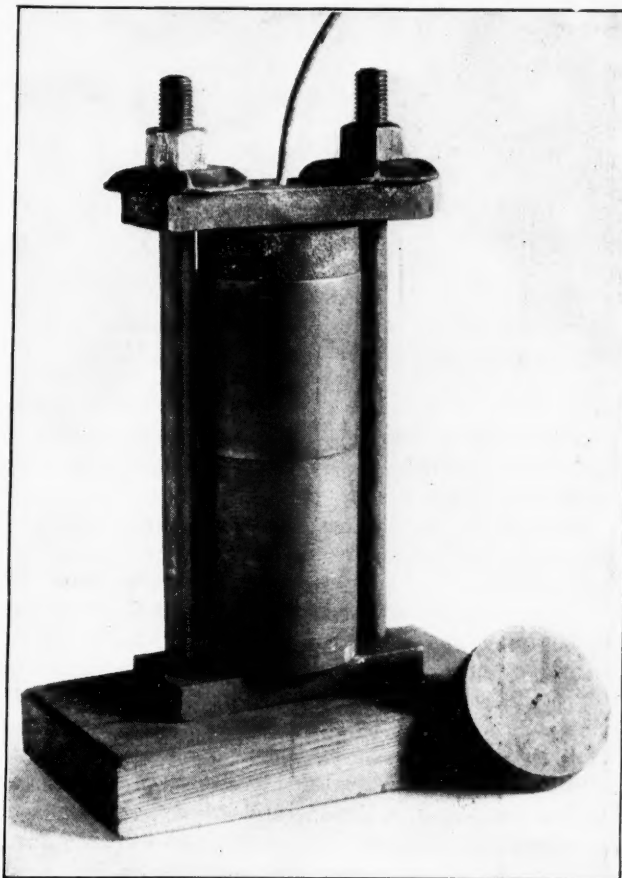
Another factor influencing the installation of miners' electric lamps is the attitude of the insurance companies in decreasing premiums on account of less liability of explosions where miners' electric lamps are in use. At the end of the fiscal year 1916, electric lamps were being installed at the rate of 2500 per week.

During the fiscal year 1916, approved electric cap lamps were tested for practicability at five mines in Illinois, with the view of a possible future installation. A number of the mines still have some of the earlier types of electric lamps which did not give complete satisfaction and now add to the prejudice against installation of the more efficient lamps.

The hazard of electric haulage in dusty mines has not been generally recognized. Wherever there is a

possibility of an explosive dust cloud being formed the presence of electric equipment that may furnish a spark or arc to ignite the cloud is a grave menace to safety. At least one large explosion was caused by the ignition of a dust cloud when a trip was wrecked by the arc resulting from the displacement of the trolley wire and the consequent short-circuiting of the current. Great care should therefore be taken to see that the coal dust on haulage roads has been made inert either by wetting or rock dusting. Care should also be taken to see that the trolley wire is securely supported at short enough intervals so that displacement of wire is less likely in the event of a wreck.

Probably the greatest change in mine haulage equipment in recent years will result from the development of the storage-battery locomotive. The claimed advantages for its use are the increased safety resulting when it replaces electric haulage using trolley wires, and the lower cost and increased speed of haulage resulting when it replaces mule haulage. With respect to safety, the elimination of the trolley is unquestionably an increase in safety. However, the storage-battery locomotive in its present development should not be regarded as being safe for use in gaseous mines. The possibilities of sparking or arcing are numerous, and therefore ignitions of gas accumulations, should such accumulations occur, are quite possible. In addition



ASSEMBLED SAND TEST BOMB

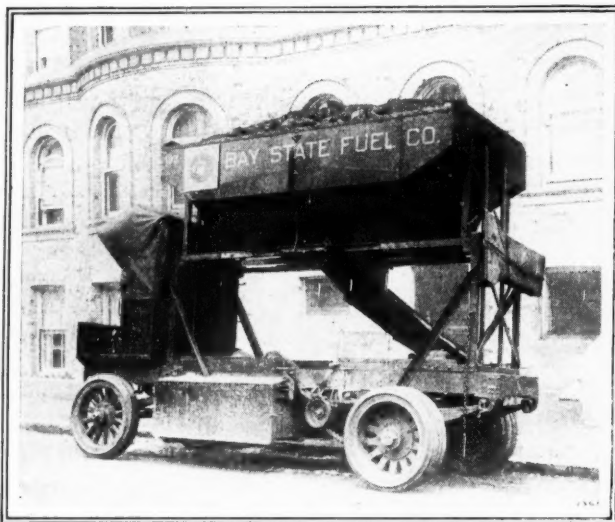
there is an added menace due to the evolution of hydrogen in the batteries. In at least one case it is known that a local explosion occurred in a charging station due to ignition of gas evolved from batteries.

"Electrics" and the Coal Crisis

BY A. JACKSON MARSHALL
New York City

In England, during the early part of this year, there were several weeks of extremely cold weather which exhausted the fuel in nearly all of the coal cellars and caused a run on the merchants who supply coal in small quantities. According to the *London Electric Vehicle*, this coal shortage had not been anticipated, and while it was not, strictly speaking, a coal famine, there was such a scarcity of horses and men that there were not available means sufficient for transporting the coal to the users. This caused considerable discomfort and suffering.

Snow and frost produced a road surface which was as good as fatal to horses. Then began a scramble for small quantities of coal. Perambulators, hand-carts, taxicabs and all sorts of things were pressed into service. It is easy to dismiss such a deplorable crisis with the remark that it was owing to the war. But



POWER ELEVATING AND DUMPING ELECTRIC
COAL TRUCK

the war was not the only cause. It merely showed up the weaknesses of a system which had come down from generations past.

A leading London coal merchant states that three journeys formed the average day's work of a man with a coal cart. Four journeys could be made if the man hustled; but with the contrariness of the independent workman, he was more inclined to do two instead of three or four, while every household was clamoring for deliveries. The maximum capacity of a coal cart is about two tons, so that the average performance of a horse and cart is six tons per day. The system of distribution is wasteful, because a horse and cart and a man have to be maintained for the transport of a few tons of material at a crawling pace for a mile or so.

If, instead of depending upon horse traction, we had been provided with mechanically propelled vehicles of much larger capacity, the coal famine would never have occurred.

The conditions were, in fact, eminently suited to electric haulage. With electric trucks no power is used

except when the vehicle is running; skilled drivers are not required, so that the carter can be driver as well; and the vehicle is ready for the road at any time under all conditions of surface. The limited radius of delivery—a feature which tells against the economical use of gasoline or steam trucks—is favorable to the most economical use of battery vehicles.

Electric trucks have already been used in England for the transportation of coal from depots to electric power stations and to other large users. A three-ton electric coal truck used by a Glasgow cooperative society worked 307 days out of 365, and was out of commission only one afternoon and the following morning during one entire year, thus attaining a reliability coefficient of 99.65 per cent.

ELECTRIC TRUCKS EXTENSIVELY USED IN NEW ENGLAND

The value of the electric truck for coal delivery has been appreciated in this country for a number of years, and especially in New England, where there are many large fleets of them in operation. A novel electric coal truck is used by the Bay State Fuel Co., of Boston. It is a five-ton machine with a body which can be hoisted on four heavy screw standards, and is adjustable to any height up to its limit of 39 in. of elevation, so that the coal can be conveyed by chute not only across the sidewalk, but across the average lawn. All operations, lifting or lowering, are controlled from the driver's seat, and the 2-hp. motor located in the rear of the chassis for this purpose is able to lift 5½ tons of coal in 1½ min., using only 26 amp. of current. The body may be lowered in one minute.

Just at this time the fact that a great number of truck drivers will be drafted for service abroad, the possibility of many horses being commandeered, and the increasing scarcity of gasoline, make it advisable for the coal dealer to carefully consider his transportation facilities for the coming year. Since women drivers may have to be employed to a great extent, the electric truck seems to be the natural means of transportation to adopt, because of its extreme simplicity of operation and lack of complicated parts. The Electric Vehicle Section of the National Electric Light Association has records of some comparative cost figures of a number of vehicles used for coal delivery which show that the "electric" is the most economical for city use.

How Anthracite Royalties Have Risen

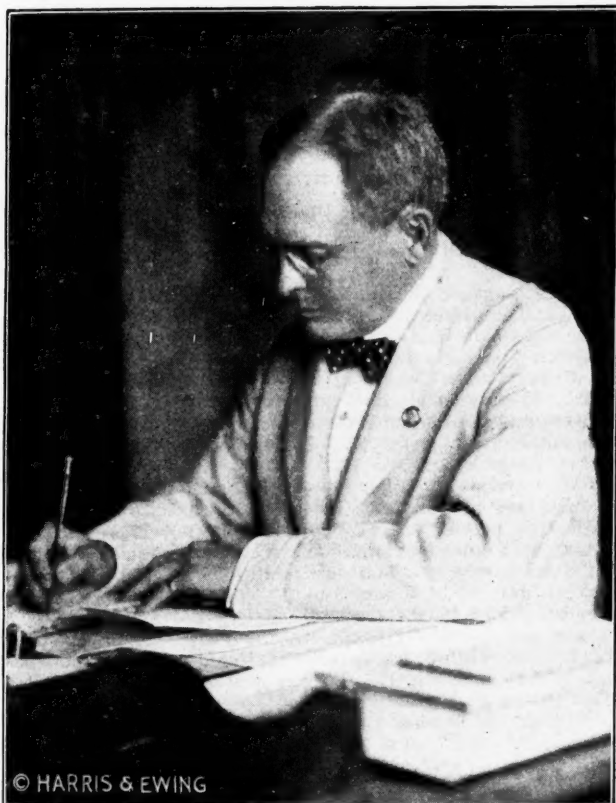
Royalty rates for anthracite in the late 60's were 8 to 10c. per ton, and the payment was to be made on prepared sizes only. In the 70's the rate rose to 25c. per ton, and payment for smaller sizes began to be asked. For pea coal, half the royalty paid for prepared coal was demanded, while a quarter of the rate for prepared coal was paid for smaller sizes. In the middle 80's prepared-coal royalties had risen to 40 and 50c. per ton with proportionate rates for smaller sizes. Thus the average cost was 30 to 40c. per ton for all sizes. This rate has been maintained except in some rare instances where rates as high as 65c. per ton have been paid on coal of all sizes where the coal was susceptible to stripping or could be cheaply mined.—R. V. Norris, International Engineering Congress, San Francisco, California.

The New Fuel Administrator

"The President announces that he has appointed President Harry A. Garfield, of Williams College, as his fully empowered representative to carry out the provision with regard to the control of fuel contained in the act of Congress approved Aug. 10, 1917, conferring upon the Executive the power to administer the food resources of the country."

This fifty-word announcement, which was issued at the White House last week, was all that was necessary to put into force the most drastic action ever taken by the Government in the history of the industry.

For some days previous to the announcement, it had been known in the best informed circles that the President had declined to name a board of three to exercise control over the coal industry and that a dictator was to be named. The name of the man most likely to be



DR. HARRY A. GARFIELD

selected for the place was guarded well by the President, although Dr. Garfield's name did enter into the speculation a few days prior to the issuance of his appointment. Several other names were mentioned equally as often in the speculative conversation which was the principal activity in coal circles while the matter hung in the balance. It may be said with all truthfulness that great relief was felt when Dr. Garfield's appointment was announced. Some had feared the possibility of the selection of a man with less balance and with more radical tendencies. In fact the representatives of the coal industry in Washington are more than pleased with the President's choice. They believe that, with the proper technical guidance, Dr. Garfield will be equal to the tremendous problem which confronts him.

While Dr. Garfield does not claim to be versed in the last word of coal-mining technic, he is not without some experience in the industry. In 1901 and 1902 he directed the organization of the Lake Erie Alliance and Wheeling Coal Co. This company opened up 8000 acres of virgin coal land in the Pittsburgh No. 8 district of Ohio, and built 30 miles of railroad and purchased two other lines. Afterward he conducted the negotiations which resulted in the sale of the property to the New York Central Railroad.

Dr. Garfield is the son of James A. Garfield, the twentieth president of the United States. He was born at Hiram, Portage County, Ohio, Oct. 11, 1863. He was graduated from Williams College, the institution of which he now is president, in 1885, but holds degrees from Princeton, Dartmouth, Amherst and Wesleyan. Much of his career has been devoted to pedagogical pursuits. He taught Latin and Roman history at St. Paul's school, Concord, N. H., in 1885 and 1886. He occupied the chair in politics at Princeton for five years prior to his election as president of Williams College.

The new fuel administrator practiced law in Cleveland from 1888 to 1893. For many years he has been prominent in municipal affairs in that city. He has served as president of the Cleveland Chamber of Commerce and of the Cleveland Municipal Association. Mrs. Garfield was Miss Belle H. Mason, of Cleveland.

When Dr. Garfield was asked, the day following his appointment, by the correspondent of *Coal Age* if he could outline his policy of action, the new fuel administrator declared he was too busy fixing the price of wheat to map out his plan of action with regard to coal. Other than to give expression to the following generalities, Dr. Garfield has given out no opinions for publication:

"All the machinery given me will be used to enforce the prices named by President Wilson. Our purpose will be to secure all the benefits contemplated in the act and the fuel control put into force will insure a reduction to the consumer. Any person who thinks this will not mean a reduction in retailers' profits will find he is mistaken.

"Each possible remedy under the bill designed to better present conditions will be studied, and we will be ready to put into force any of its provisions."

Missouri's New Laws

A newly enacted law in Missouri requires the product of that state to be given preference in the purchase of coal for public institutions. Another act reads: "The chief mine inspector and his assistants shall have the power, and it is hereby made their duty, to stop the operation of and close any mine or part thereof where poisonous damps exist, where rotten ropes or unsafe cages are used, or where a safe escapeway is not provided for all employees. Any person or persons violating the provisions of this section, and any member or stockholder or officer of any company or corporation who shall violate the provisions of this section, shall be deemed guilty of a misdemeanor, and on conviction thereof be punished by a fine of not less than \$25, nor more than \$100, or imprisonment in the county jail 30 days nor more than 90 days, or both such fine and imprisonment for each and every separate offense."



WITH the naming of the coal administrator, the fixing of prices for both bituminous and anthracite coal and the specification of jobbers' margins, all within a few days, much confusion is in evidence among those in Washington who are concerned with the affairs of the industry. The various orders have been issued from the White House with little accompanying explanation. The President is not available to clear up many of the uncertainties. The coal administrator is too busy fixing the price of wheat to attempt any explanations as to coal. An evidence of the problematical state of affairs is the action of the directors of the National Association of Coal Operators in canceling the meeting of all operators which had been called to meet in Pittsburgh, Aug. 29.

The lack of specific information with regard to the bituminous situation made it necessary for Francis S. Peabody, the chairman of the Committee on Coal Production, to inquire officially as to when the prices fixed went into effect; whether they applied to bunker and export coal; whether they affected existing contracts and whether a higher price would be allowed the high-cost mines. In addition Mr. Peabody asked on what basis of cost and profit the prices had been fixed. He was advised that the prices became effective immediately, that they do not refer to bunker or export coal and that they have no effect on contracts. He was informed, however, that adjustment of the contract matter may come later. Mr. Peabody was referred to the coal administrator for information regarding inequalities in the cost of production and informed that the prices were fixed after taking into consideration a large amount of information other than the actual statistics available as to costs.

The statement with regard to anthracite prices and jobbers' margins as it emanated from the White House is reproduced in its entirety as follows:

The following regulations shall apply to the intrastate, interstate and foreign commerce of the United States, and the prices and margins referred to herein shall be in force pending further investigation or determination thereof by the President.

JOBBER'S MARGINS

1. A coal jobber is defined as a person (or other agency) who purchases and resells coal to coal dealers or to consumers without physically handling it on, over or through his own vehicle, dock, trestle or yard.

2. For the buying and selling of bituminous coal a jobber shall not add to his purchase price a gross margin in excess of 15c. per ton of 2000 lb.; nor shall the combined gross margins of any number of jobbers who buy and sell a given shipment or shipments of bituminous coal exceed 15c. per ton of 2000 pounds.

3. For buying and selling anthracite coal a jobber shall not add to his purchase price a gross margin in excess of

20c. per ton of 2240 lb. when delivery of such coal is to be effected at or east of Buffalo. For buying and selling anthracite coal for delivery west of Buffalo, a jobber shall not add to his purchase price a gross margin in excess of 30c. per ton of 2240 lb. The combined gross margins of any number of jobbers who buy and sell a given shipment or shipments of anthracite coal for delivery at or east of Buffalo shall not exceed 20c. per ton of 2240 lb.; nor shall such combined margins exceed 30c. per ton of 2240 lb. for the delivery of anthracite coal west of Buffalo. Provided, that a jobber's gross margin realized on a given shipment or shipments of anthracite coal may be increased by not more than 5c. per ton of 2240 lb. when the jobber incurs the expense of rescreening it at Atlantic or Lake ports for transshipment by water.

ANTHRACITE PRICES

4 Effective Sept. 1, 1917, the maximum prices per ton of 2240 lb. free on board cars at the mines for the grades and sizes of anthracite coal hereinafter specified shall not exceed the prices indicated in paragraph 5 when such coal is produced and sold by the Philadelphia & Reading Coal and Iron Co., Lehigh Coal and Navigation Co., Lehigh & Wilkes-Barre Coal Co., Hudson Coal Co., Delaware & Hudson Co., Scranton Coal Co., Lehigh Valley Coal Co., Coxe Bros. & Co., Pennsylvania Coal Co., Hillside Coal and Iron Co., Delaware, Lackawanna & Western Railroad Co., Delaware, Lackawanna & Western Coal Co., Susquehanna Coal Co., Susquehanna Collieries Co., Lytle Coal Co. or the M. A. Hanna Coal Co.

5. The grades and sizes for which the maximum prices are specified are as follows: White ash anthracite coal of the grade that between Jan. 1, 1915, and Jan. 1, 1917, was uniformly sold and recognized in the coal trade as coal of white ash grade; red ash anthracite coal of the grade that between Jan. 1, 1915, and Jan. 1, 1917, was uniformly sold and recognized in the trade as coal of red ash grade; and Lykens Valley anthracite coal that is mined exclusively from the Lykens Valley seams and of the grade that between Jan. 1, 1915, and Jan. 1, 1917, was uniformly sold and recognized in the coal trade as coal of Lykens Valley grade.

	White Ash Grade	Red Ash Grade	Lykens Valley Grade
Broken.....	\$4.55	\$4.75	\$5.00
Egg.....	4.45	4.65	4.90
Stove.....	4.70	4.90	5.30
Chestnut.....	4.80	4.90	5.30
Pea.....	4.00	4.10	4.35

6. Producers of anthracite coal who are not specified in paragraph 4 shall not sell the various grades and sizes of anthracite coal at prices that exceed by more than 75c. per ton of 2240 lb. free on board cars at the mines the prices enumerated in paragraph 5. Provided, that any producer of anthracite coal who incurs the expense of rescreening it at Atlantic or Lake ports for transshipment by water may increase the price thereof by not more than 5c. per ton of 2240 pounds.

7. Producers of anthracite coal specified in paragraph 4 of these regulations shall not sell anthracite coal to producers of anthracite coal not specified in paragraph 4.

8. Dealers and selling agents shall not sell coal produced by the producers included in paragraph 4 on the basis of the prices fixed at the mine for coal produced by producers not specified in said paragraph.

(Signed) WOODROW WILSON.

Coal production continues to decrease, as is shown by the weekly report issued by the Geological Survey, Aug. 25. Returns from mines representing more than one-third of the total output of the country show that

they produced 71.8 per cent. of their full-time capacity during the week ending Aug. 11. The percentage of full-time capacity varied from 94 per cent. in southwestern Virginia to 63.2 per cent. in Indiana. Labor shortage, strikes and unfilled car orders are the principal causes hampering production. A strike in the southern Appalachians decreased shipments from eastern Kentucky and eastern Tennessee nearly 20 per cent. The relative decrease in production caused by strikes and labor troubles was marked during the week under review. In most sections there was a decrease in the number of unfilled car orders. Shipments of coal decreased 4 per cent. during the week.

During the past week the Federal Trade Commission has issued reports on the retail anthracite coal prices in New York City, Brooklyn and Boston. An extract from the report on the New York situation is as follows:

The producers and distributors of anthracite, with but few exceptions, have not discriminated against New York City. During the first five months of 1917 New York City retailers received 2,986,267 gross tons of anthracite, which was 10,454 tons more than was received during the corresponding period of 1916. The receipts during June, 1917, were 447,376 gross tons, which was 24 per cent. greater than during June, 1916. During July, 1917, the receipts were 432,312 gross tons, which was 44 per cent. greater than during July, 1916. Thus the combined receipts for the first 7 months of 1917 were 229,184 tons—7 per cent.—greater than during the corresponding period of 1916. Forty-one of the 57 retailers received more anthracite during June and July, 1917, than during the same months in 1916.

With regard to the profits of the retailers the commission says:

The largest retailer in New York is now selling about 40 per cent. of the anthracite retailed there. In his desire to obtain a quantity of coal sufficient for the abnormal demands of his customers, it was necessary for him to purchase large quantities of coal from the individual operators at premium prices. This action has resulted in an extraordinarily high average cost for his coal. To this cost he has added the expense of discharging, reloading and delivering and a net profit of 25c. per net ton. The prices charged by him have always been, and are now, adopted by practically all the retailers. Inasmuch as many of them have not gone outside their regular sources and purchased coal at premium prices—there were 12 such in July, and many others who obtained only a small quantity of coal at excess prices—the gross margins they are realizing are exorbitant. Instead of taking care of their regular customers in this emergency at a price based on their cost they have followed the price set by a retailer who had exceedingly high costs.

In the Boston report the commission states that it is obvious that the needs of Boston and of New England have not been taken care of. The receipts in Boston during the first five months of the year were 83.8 per cent. of those during the same period of 1916. "The coal retailers of Boston," the report says, "with a few notable exceptions, did not hesitate to take advantage of the necessities of the public and to charge for anthracite a price that netted them unreasonable margins."

There are 19,279 companies or individuals operating coal mines in the United States, according to the records of the Geological Survey. Kentucky and West Virginia have the largest number of operators, with 4039 and 3486 respectively. Ohio has 2584 and Pennsylvania 2363 bituminous and 172 anthracite operators. Pennsylvania leads in the number of operators of mines having more than 3000 tons capacity, with 808. West Virginia is next with 553. Operators of mines producing

less than 500 tons are most numerous in Kentucky, which has 3691; West Virginia has 2914.

The production of coke for the week ending Aug. 18 was 301,700 tons, or 70.2 per cent. of capacity, the first weekly report of the United States Geological Survey shows. The limiting factors to production are labor shortage 21.6 per cent. and car shortage 5.6 per cent. In connection with the publication of the first weekly coke report the following statement is made:

No study of coal production, possible and attained, could be complete which did not embrace the operations of coke plants. In this issue of the weekly report is begun an analysis of the output of the great beehive coke region of central Pennsylvania, including the Connellsville, Greensburg and Latrobe areas. Reports of shipments and reasons for failure to attain maximum output, received by the Geological Survey from 72 beehive coke operators, are summarized. The base used in calculating percentage of capacity attained in the great majority of cases is the railroad's rating of the mine, which in the region in question is in excess of the capacity of the mine possible with its present labor force. The figures are therefore not comparable with those published for coal mines, which use as a base the output when the mine runs full time with the force of laborers at the moment available.

The new coaling plant at Balboa, Canal Zone, has been placed in regular commercial service, according to an announcement from the Panama Canal office. The Balboa plant has a normal storage capacity of 150,000 tons. It can deliver 500 tons per hour from each of the two reloader towers.

Our Embargo on Exports

Coal can only be exported now by special license from the Exports Board, as it is one of the commodities on the embargo list that was recently made effective by Presidential proclamation.

Many of the neutrals denounce most bitterly this curtailment of exports, which in addition to coal and coke comprise the following: Pig iron, steel billets, ship plates and structural shapes, scrap iron and scrap steel, ferromanganese, fertilizers, fuel oils, kerosene and gasoline, food grains, fodder and feeds, meats, fats, arms, ammunitions and explosives.

It is believed by many that by cutting down exports to neutral countries the United States has taken a step that will tend to shorten the war, as quite a large proportion of the materials that went abroad in the past leaked through the neutrals' hands into Germany. One investigator says that in 1916 enough food was imported by the Central Powers from the Scandinavian countries, Holland and Switzerland to feed the entire German and Austrian armies for 275 days. Large quantities of pyrites, used in the manufacture of sulphuric acid, have been imported from Norway; 8,000,000 tons of iron ore came from Sweden, and 23 per cent. of the fats used in Germany came from the outside in the same way.

The embargo should also have the effect of reducing some prices at home, as the curtailment of the demand from abroad virtually increases the supply available for the consumption of those in the United States. This does not apply to coal, however, for our exports of fuel to the neutral countries adjacent to the Central Empires have been almost nothing.

The Labor Situation

General Labor Review

The tendency to expand local strikes into strikes involving all the mines of the company, operating the mine first affected, is changing the situation in the anthracite region materially. Formerly a mine would strike, and the trouble would not spread unless the men at other operations had a like grievance. Company lines were not observed. It was the grievance alone that governed.

Now that the general grievance committees have come into being, it is only with difficulty that strikes are prevented from spreading. Two recent instances of the new tendency are the Taylor strike of the Delaware, Lackawanna & Western R.R. and the Buttonwood, Inman and Parrish strike of the Lehigh & Wilkes-Barre Coal Co. The union men will have before long to decide who is master—the union or the general grievance committees of the large companies. In central Pennsylvania there is a similar clash between authority and power. John Brophy, of Nanty Glo., Penn., represents authority and the mine workers, power. Brophy has addressed a remarkably good letter to the mine workers counseling them to be contract-abiding. He is developing in office a responsibility that was by no means so evident when he pushed James Purcell hard to throw over agreements which had been duly signed. Every man is more punctilious about keeping his own word than he is about defending the integrity of the word of his predecessors. In Illinois it appears that the strike has been broken. Frank Farrington, the president of the district, has revealed that he was negotiating for an increased wage scale for daymen when the strike broke out. The strike delayed the action, and President Wilson's ultimatum as to prices now makes an increase in wage rates somewhat unlikely.

Southeastern Kentucky and the State of Tennessee are still largely idle, but the strike seems in places to be breaking up. The smaller operators are making concessions, and the employees of the large operators are in many cases returning to work.

In Alabama, as soon as the mine workers were notified by their officials not to quit work pending the conference to be held under the auspices of the United States Department of Labor, there were a few operators who posted notices that the union had called off the strike. These notices angered the employees and they went on strike at once. The other men are continuing at work till the result of the conference is known.

The union may after all gain nothing by taking advantage of a nation at war. It was no time to attempt to establish supremacy. If the recent strikes for recognition everywhere fail, the union will be weakened rather than strengthened by its untimely activity. Men who have joined the union because it seemed likely to succeed will be unwilling to go on paying dues after it has definitely failed, and re-enrollment will not be so easily and sweepingly effected as was the first enlistment.

How Calm Is a Union Peace?

The question, How much assurance of peace can we expect from a closed shop? is naturally one which is being asked by the anthracite industry, though the parties who ask the question may have fully made up their minds as to the answer that must be given to the request of the mine workers for exclusive employment of organization men.

One would think that the mine workers would try to show the operators in full the beneficence of the contract. For a month or two, one would think they would avoid taking part in any strikes but button strikes, so as to show that the button and what it stands for is the only obstacle to security. But though there is much turbulence, there is much honesty about the workingman. He may use

guile in his arguments, but there is none in his actions. He may promise that there will be a serene calm in a union peace, but he is not going out of his way to prove it by refraining from strikes and by an adhesion to the leadership of the union officials. The Taylor colliery strike proved this. The men went back to work after a long delay and the strike did not spread to all the mines of the Delaware, Lackawanna & Western R.R., Coal Department. But at that it showed that complete unionization did not prevent strikes in violation of the union contract, and the way in which Dempsey and Gleason had to leave the meeting at Taylor when the vote was taken proved that there was no discipline and order in the

union ranks. A strike has now been called by the employees of the Buttonwood, Inman and Parrish collieries for a new wage scale—that which prevails at the South Wilkes-Barre mine—and there is a great risk that all the mines of the Lehigh & Wilkes-Barre Coal Co. will go on strike in sympathy. At a meeting of all the employees of the company called by the general grievance committee, three district officials, Peter O'Donnell, James Stone and Peter Dianoski pleaded that the men go back to work and submit their grievances to the conciliation board. This they refused to do. They do not recognize the union; they want the operators to do that.

The general grievance committees seem to be like the soldiers and workmen's councils in Russia, a power within a power. The Government of Russia proposes and the councils dispose. So likewise the International Board of the United Mine Workers, with its officers at Indianapolis, Ind., and its alleged authority on both sides of the international boundary, formulates its edicts and the general grievance committees annul them. The operators will naturally want to know whether it is worth while to sign an agreement with the *rois faibles* who have the seals and the title, but who have surrendered their authority to others. There is plenty of evidence that the hard-headed union leaders realize this. They know that they cannot continue to make contracts unless they show evidence that they can deliver the promised goods. The present unrest, by throwing a doubt on the union authority is undermining its strength.

The number of unauthorized strikes that has occurred in this district lately, some of them being in direct violation of our scale agreement, has been a source of much anxiety and deep concern to us. Those in violation of the agreement cannot be justified and should not occur. Union men should not, and if they understand the principles of our union they will not, be a party to, nor promote nor approve of, such strikes. Strikes of this character strike directly at the foundation of our organization, the trades agreement; they endanger the whole labor movement; they promote division and disruption; and at the best, even where the object is secured for which they are waged, they sacrifice a great permanent benefit for a small temporary advantage. Endangering as they do the very existence of our union, they can secure no advantage that would compensate such a loss, or justify such a risk, and members of our union will be well advised to oppose any and all attempts to persuade them to be parties under such conditions.—John Brophy, President, District No. 2 (central Pennsylvania region).

Illinois Negotiated for New Scale

Frank Farrington, president of the Illinois district in the United Mine Workers of America, issued a statement recently, revealing the fact that he had been negotiating with the coal companies for an increase in the wages of the company men, and that the negotiation had to be dropped because all the efforts of the operators were needed to suppress the strike. He said in his statement that just as soon as the strike was over and the mines working again he would renew the negotiations.

He is skeptical, however, as to the possibility of securing the increase in view of the price fixed by President Wilson for the Illinois field, Illinois with Indiana having the lowest rate of any field except the Big Seam field in Alabama. He is afraid that sporadic strikes will now break out against the wage scale, which scale the coal companies will not be able to raise. Perhaps it may not be so sporadic, either, for petitions for a general strike in violation of the contract, just recently revised, have been pouring into the Springfield headquarters from the southern Illinois field.

It is evident, Farrington says, that the operators will not be able to grant increased wages because their margin of profit is too close under the new prices. He declares that the Illinois price is unfair because the labor cost is higher in Illinois than in any other state upon which the President has seen fit to impose any such price rate as he has fixed for Illinois. He agrees with the operators in their declaration that many mines will have to close down.

Although Farrington says he will do his utmost to uphold the agreement between the miners and operators, he announced after a meeting of the executive board that the wages of the company men were too low, compared to the miners' wages, and that an effort will be made to obtain an increase for them. It is evident that the mine workers will bring strong pressure to bear for the calling of a joint convention to consider a readjustment of wages.

The strike is practically over. Frank Farrington issued an ultimatum that all who did not return to work by Thursday, Aug. 23, would forfeit their membership in the union, but later he withdrew that edict and declared that the union would grant the backsliders a few more days to return.

Three locals at Hillsboro remained out till Aug. 23, but were finally induced to return by Vice President Harry Fishwick, who addressed them on Aug. 22, advising them to leave the question of the company men's wages to the union officials. A few locals scattered through the districts are reported to be still in rebellion.

Shall Miners Ride in Coaches?

On Aug. 4 W. J. Jackson, president of the Chicago & Eastern Illinois R.R., following a conference with officials of District No. 11 of the United Mine Workers of America, presented President Edward Stewart, of the mine workers, with a statement relative to the demands of the Clinton, Ind., mine workers that coaches instead of box-cars be supplied on miners' trains running to the Clinton mines.

To secure their demands the miners in the Clinton field voted to strike, and for several days the mines lay idle. President Jackson in his statement accedes to the suggestions of Judge Woods, of the Indiana Public Service Commission, and declares that the company has installed three new coaches.

As soon as possible the company will equip the miners' trains completely with coaches, but this action is said to be impossible at the present time. In addition the company will repair the present box-cars and old coaches, the condition of which caused the recent dissatisfaction. A Clinton committee of mine workers is watching the situation. The case is not regarded as settled, and the Public Service Commission will continue to hold it subject to further consideration until new coaches are provided.

The controversy was taken up with the State Council of Defense by William J. Freeman, a Terre Haute operator, who represents the Committee on Coal Production of the council. Through Mr. Freeman the conference between President Jackson and the miners was arranged.

In his report Mr. Freeman declared that the railroad had failed to comply with the orders of the Public Service Commission and 4000 men had refused to work.

At the same council meeting H. R. Kurrie, president of the Monon R.R. and a member of the council, said: "Although the subject is a delicate one, I feel that I would not be doing my full duty to this council if I did not mention that there is great danger of a serious coal shortage in Indiana next winter." Mr. Kurrie added that the coal mines are not producing coal enough to fill all the cars his road could supply, and coal is not being stored for domestic purposes, though the road is providing all the cars asked for.

He said consumers should be aroused to the situation before the cold weather interferes with the efficiency of the railroads and the demand cannot be supplied at any price. Mr. Freeman, as an operator, looked at the matter differently. He said that the average car supply in Indiana was still "only about 70 per cent."

Mr. Kurrie declared that dynamite had recently been found in a car of coal, with wires projecting to the surface, and Mr. Freeman reported a request from local No. 2, of Bicknell, asking that steps be taken against the introduction of poisonous gases into the mine shaft, which might jeopardize the lives of the miners. The mine workers are extremely suspicious of "enemy influences" and enemy activity.

Is "Board of Control" from Berlin?

Department of Justice agents are investigating the activities of an organization which styles itself the "Board of Control," with headquarters at Staunton, Ill., which seems to have had a hand in stirring up the recent central Illinois strike. Circulars and agents are said to have been sent out, spreading dissatisfaction. Vice President Fishwick, of the United Mine Workers, declares that the strike was brought about by men who do not belong to the union and whose purposes are inimical to it. It is considered significant that at one mine near Springfield the German and Austrian miners refused to return to work when the others wanted to. There are many alien miners in the Staunton section. A former official of the United Mine Workers is said to be at the head of the movement. In communications to locals they have been directed not to settle or compromise strikes until advised by the "Board of Control."

Windup of West Kentucky Strike

Resistance that was offered to a body of National Guardsmen, fired on by strikers said to number about 100, during the clash at Diamond mine, in Clay, just before the western Kentucky strike was called off, has resulted in a determined effort on the part of the Federal authorities to round up the alleged culprits. The towns of Clay and Providence have been placed under martial law, 10 men have been taken into custody and search is being made for about 30 more. The arrests were made on Federal warrants, and included among the prisoners were Kell Toch, a union organizer; Tom Morgan, president of the Clay local, and John Braden, owner of a small mine. The prisoners were taken to Hopkinsville, where they were examined by the United States commissioner on the charge of opposing with force the laws and authority of the United States. Eight of the men waived examination and one proved an alibi and in consequence was dismissed. Of these men seven have been held to the Federal grand jury to sit at Owensboro at as early a date as possible.

Bonds for the defendants were fixed at \$5000, two of them giving bond at once, the others being taken to Owensboro. According to evidence at the hearing, the defendants and others conspired to oppose the soldiers and drive them away. Officers and soldiers told of the clash near the Black Diamond mines at Clay, saying that there were only eight soldiers in the band that drove the miners out of the ravine in which they were barricaded. One of the miners is acting as a witness for the Government.

Three other men who were taken into custody at the time of the clash on Aug. 6 have been taken from Louisville to

Lexington, Ky., where they will be held pending investigation of the War Department and await action of the grand jury. Order obtains in Webster County and other parts of the area formerly affected by the strike. Half a hundred of the men wanted are said, however, to have escaped into the State of Illinois.

Since the strike was called off there has been a well-defined movement of defeated strikers to Northern fields, principally Illinois and Indiana. Transportation is being furnished to the workers and their families by the union, which has closed its headquarters at Madisonville. Soldiers in automobiles continue to scour the countryside. A soldier on guard at Providence shot and fatally wounded a civilian chauffeur who ignored a command to halt his car.

East Kentucky Strike Failing

The strike in southeastern Kentucky and the mining region of Tennessee, which involves 20,000 mine workers, still continues. Apparently there will be no settlement such as the Federal mediators are seeking. The important operators are practically a unit in declaring that they will never recognize the organization.

The attitude of all the coal producers from end to end of the country has been stiffened materially by the price regulation. Liberality is impossible with the price of the product so closely controlled. There continue to be reports from many sources that the operators have made wholesale concessions and that thousands of miners are returning to work with all that they have demanded, including especially recognition of the union and the eight-hour day. On the other hand responsible operators and other authorities in the section insist that no important operators have given in and that the smaller operators, whose continued activity is problematical any way under the recently announced schedule of prices, are the only ones who have made terms.

The tenor of the news from the strike district is rather to the effect that the strikers are becoming disaffected. Several important operations have resumed on considerable scale with nonunion men and deserting strikers. After one operator had asked an injunction to compel his former pumpmen to return to work, the union committee authorized such work on the part of strikers. But prior to that time most of the operators had provided for the performance of that necessary work. The Wisconsin Steel Co.'s mines at Benham are operating at three-fourths full strength, while the North Jellico mines at Wilton, Knox County, are still running. Other operators are recruiting nonunion workmen or proposing to do so. At Middlesboro, Bell County, it was reported last Saturday that two attempts to resume operation with nonunion labor were stopped, the nonunion laborers being fired on by unknown persons. The assailants, it is said, used high-power smokeless guns and were ambushed in the hills opposite the plant.

It is reported that tents are being shipped into the strike district for housing the strikers. Statements appear in the newspapers of the section to the effect that the allowance from the general organization to the strikers is \$20,000 a week, which one newspaper man figures as being an allowance of \$1.18 a week for each striker and his family.

Where Howat Sullies the Waters

The production of coal in the Kansas fields is heavily handicapped by labor troubles. On Aug. 1, owing to the many strikes, there was a shortage of 20,000 tons in daily production. Prior to Aug. 1 the miners of the Osage field had all gone on strike, asking for an increase of 50c. a ton. Thirteen mines in the Pittsburg district also were idle, the miners striking over the discharge of a superintendent. On Aug. 1, 13 more mines quit work as a one-day's protest against the bone-dry law and the high cost of living.

The Osage and the 13 mines in the Pittsburg district are still down, the "bone-dry" strikers having resumed work. They went back after adopting a resolution asking Governor Capper to go to Washington as their special envoy to see if he could get the Government to lower the cost of

living. Governor Capper promised to carry their message and intervene with the President on their behalf.

Alex. Howat, president of the Kansas miners, has refused to welcome any intervention in the Pittsburg controversy. The Southwestern Interstate Coal Operators' Association appealed to him first, unsuccessfully; then to President White, also unsuccessfully; then to the Department of Labor. The latter sent James Purcell, formerly president of the central Pennsylvania mine workers.

Purcell came with a willingness to act as mediator. He told Howat that the proposal of the operators' association, that the whole matter be referred to him, was fair, and suggested that they go back to work and leave the settlement to him. Howat is said to have replied that "Washington and the whole world couldn't make him change his mind on the subject of the strike." And there matters rest. Even the miners who are still at work are not producing at a normal rate.

Oregon Corrects a Superlative

In our issue of July 7 we somewhat boldly featured a communication from our Seattle correspondent, heading the article "Washington Pays the Highest Wage." There is a danger in superlatives, and we have waited for the inevitable correction. It comes from M. C. Butler, superintendent of the Oregon Coal Co., Marshfield, Ore. He says "Our schedule is a little higher, for we pay the Washington scale and furnish all tools to the miners, and that is quite an item these days. The climate and living conditions are practically the same as on the western slope in Washington." Now let some applicant rise to take the honors from the Oregon Coal Company!

Labor Leaders Win Inspectorship

The story of how the labor leaders in Arkansas won a contest for the state inspectorship of mines and how the mine workers lost it, though a little remote in point of time, is still quite interesting. The mine workers preferred and voted for the past incumbent, Thomas H. Shaw, no less than twice, each time almost unanimously, but the union leaders opposed him and the operators were none too friendly. The upshot was that the mine workers were turned down, that the newly elected governor, Charles Hillman Brough, refused to be guided by the union vote as he had promised, and that a labor leader, Robert H. Boyd, vice president of the district mine workers' union, was appointed state mine inspector in his place.

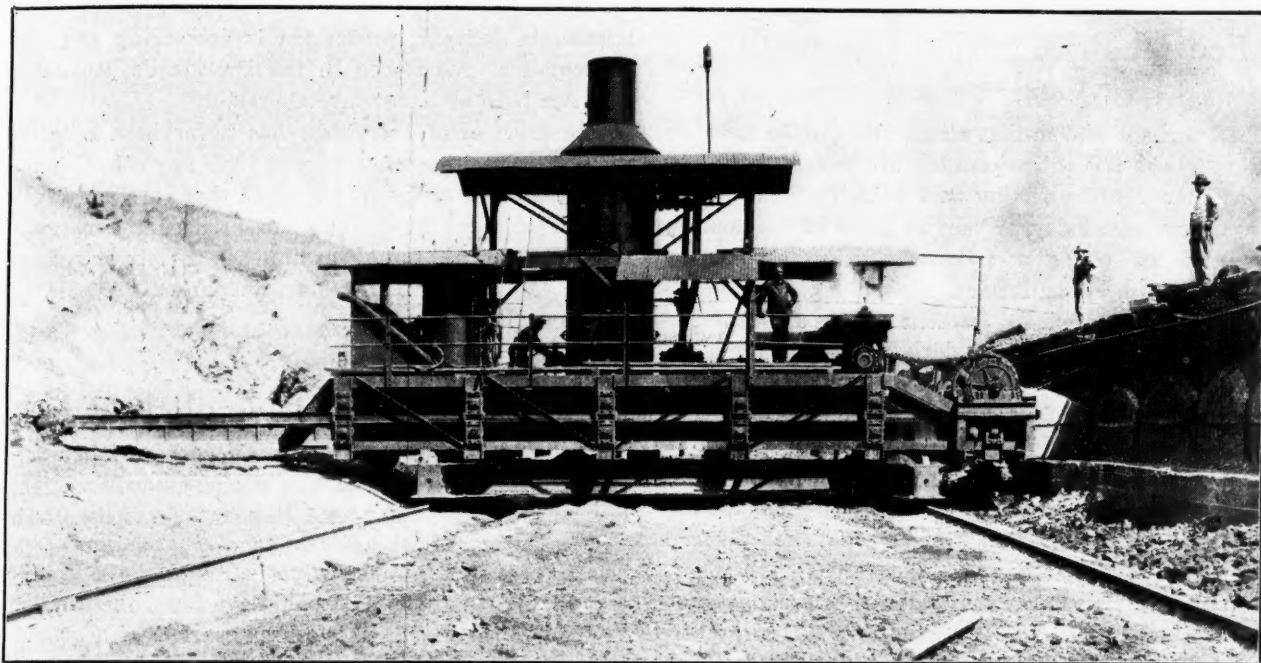
At the Katy Coal Co.'s operation, at Midland, 80 men went on strike when Boyd was appointed in place of Shaw, but the strike ended July 14.

Governor Brough would not appoint Shaw inspector because Shaw had worked against him politically, and the union leaders apparently were willing to deprive the mine workers of their rights under the promise in order to secure the appointment for one of their number. On May 27 an explosion occurred at No. 6 mine of the Central Coal and Coke Co., at Huntington, Ark. Two shotfirers were killed. Many repairs had to be made after the explosion. Before Boyd was appointed, on July 8, about 400 miners at the mine refused to go to work till the state inspector said the workings were safe. The mine was ready to resume on July 2, but the men refused to go to work till inspection had been made by an authorized inspector, Shaw being in doubt if he was legally competent to examine the mine.

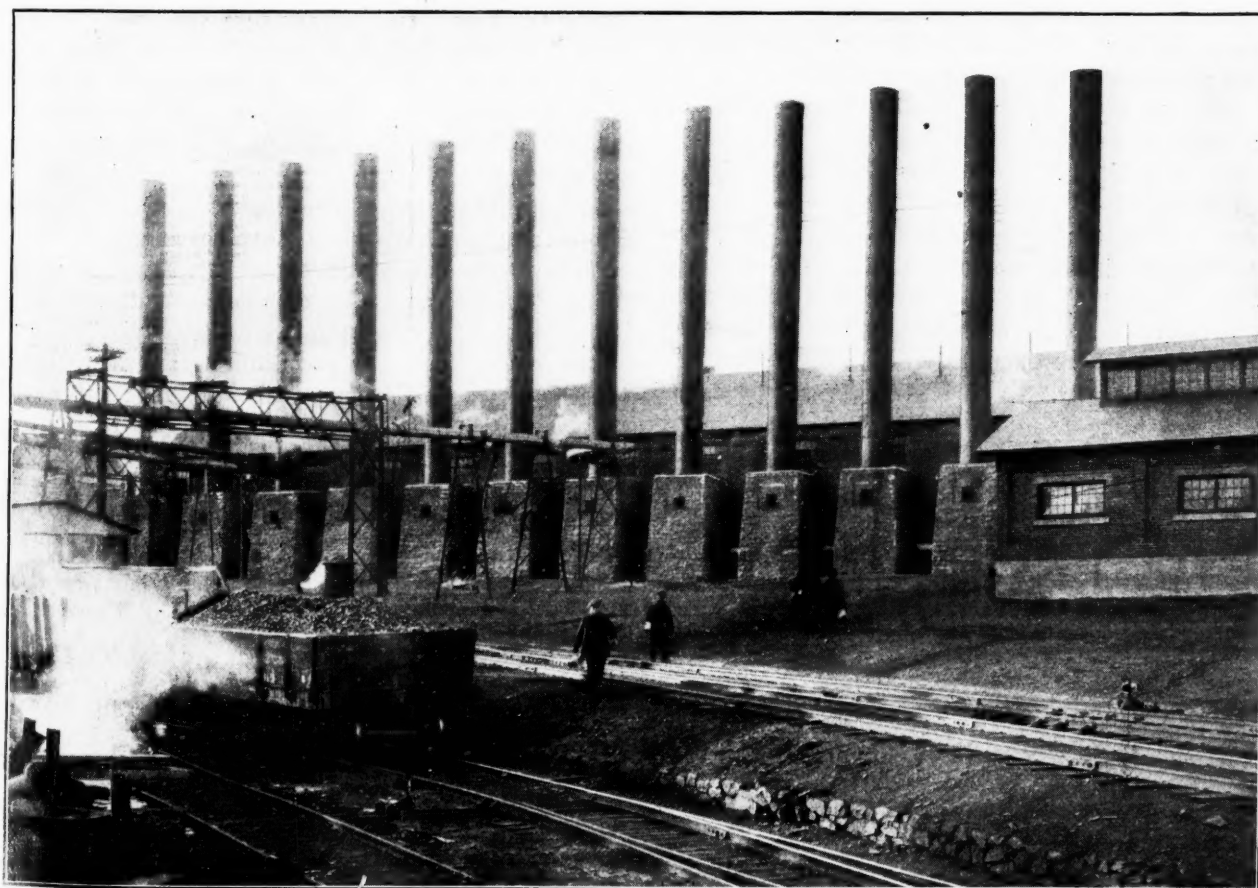
A special convention of the Arkansas mine workers was called for July 23 and 24 and met at the Labor Temple, Fort Smith, Ark. About 40 delegates were present, representing a majority of the locals in the state. The purpose of this convention was to find a means of breaking away from the district union as a protest against the action of the officers of the organization in flaunting the expressed wishes of the mine workers of the district. However, the trouble has now blown over. The leaders have their inspectorship and the mine workers can do nothing about it.

Robert Boyd has resigned as vice president of the district union (No. 21) and a new election is ordered. Meanwhile John Hobbs, of Thurber, Tex., acts in his stead.

Snapshots in Coal Mining



COKE PUSHER AT THOMAS COKE OVENS, COALBURG, ALA.; COKE OVENS OF SLOSS-SHEFFIELD STEEL AND IRON CO.



STEEL STACKS OF THE NO. 2 COLLIERY OF THE KINGSTON COAL CO., KINGSTON, PENN.

Editorials

Federal Price Fixing Demoralizes Coal Industry

IT IS perhaps seldom that all members of an industry throughout the entire country are agreed upon any proposition vitally affecting that industry. Such, however, is the case today. From all parts of the country come reports stating that the coal prices as fixed by proclamation by the President have plunged the industry into the "Slough of Despond." A pall of uncertainty and foreboding hangs dark over the land.

No one complains of the prices as fixed for anthracite coal. It is deemed that concerning this fuel the Government was wholly just. The authorized advance of 90c. per ton on the pea grade was gratifying to all concerned and compensated the colliery owners for any slight cuts that occurred in other sizes. The producers and vendors of anthracite feel therefore that they have no just cause to complain and that the prices as authorized are at a level that will permit practically every operator great and small to make a profit—the percentage of which will depend upon the equipment and efficiency of the producing colliery, but a profit nevertheless. The balance, be it big or little, will almost without exception be on the right side of the ledger.

Not so with bituminous. The producers of this grade of coal—which constitutes probably seven-eighths of the nation's fuel—met some few weeks ago, and in council with high officials of the Government agreed upon spot prices that would net them—like the producers of anthracite—a profit, the magnitude of which would depend upon the equipment and efficiency of the producing mine. These prices, agreed to by the council of operators, were so low that many of the so-called "wagon mines" were compelled to cease operations.

The industry might have accepted, without complaint, prices emanating from the White House that would have closed the balance of the wagon mines and "country banks," but it was hardly prepared for the drastic measures that came, and the prices which it is everywhere stated will inevitably drive all but the larger and more efficient mines upon the rocks of bankruptcy.

And what have been the immediate effects of price fixing? How far has it gone toward speeding up production and relieving the excessive demands for fuel?

The prices as fixed do not affect existing contracts, consequently, contract coal is still moving in practically undiminished volume. The spot market, on the other hand, is chaotic. Spot coal has disappeared from the market almost entirely. No one can quote prices for

immediate delivery, production is decreasing and the "stimulation" mentioned in the President's proclamation has been of a negative character.

The survival of the fittest has never been a satisfactory proposition when viewed from any other standpoint than that of the fittest. And there are not mines enough of the "fittest" class to produce the nation's fuel. The only glint of silver lining in the present gloom is the fact that the prices as announced are said to be "tentative."

A Few Crumbs of Comfort Still Left

BEING on a war diet, the bituminous coal industry will consume with due diligence and carefulness the crumbs of comfort left to it in the decision of the President. After all, there are some consolations left. The respect of the public is not one of these, and it is certain that the industry would have faced the decision better had the coal interests been treated with greater tact and honesty by the public.

The coal industry was only one of the many industries making money. It was not making any more money than many industries make year in and year out. It was not earning as much as many war industries have been earning, nor had it earned those profits as long. Those who abused it were making as much money in the using of coal as the operators were making in the producing of it.

So the hard words and the priority in constraint and Governor Lowden's unfeeling "Give her another belt"—we do not have and so cannot quote his actual words—did not appeal to the coal industry as fair and honorable. But if other industries later fare no better the feelings of the coal industry may be mollified. For that, there must be further legislation, and the coal man somewhat naturally hopes it will come even though a careful view of economic necessities would show conclusively that all such legislation is harmful to the interests of the state, whether the action of the law is to lower profits in coal or in some other industry.

Nothing would make the operator surer that he was to be used fairly than a provision that the industries using raw materials which are allowed to buy cheaply would not be allowed to make unregulated profits. It seems to be the intention at present to let the manufacturer buy at named rates and sell his products at unnamed and unnameable figures. The public is promised little if the cheap fuel is merely to swell the profits of the millman and manufacturer who use it.

After all, the coal man wonders whether low profits are going to be the bridge to a successful war or a mere

ideal of theorists which will wreck the American offensive. He wonders whether the coal man has been singled out for constraint just because he fills so large a place in industry, and because it is so easy to figure out his costs and so hard to figure out the costs of other and less elementary industries.

But all this has no reference to the crumbs of comfort just discussed. When considering the treatment of the coal industry one is apt to overlook the crumbs in indignant memory of the full meal which passed incontinently away but half or one quarter consumed. But let them now be enumerated.

Viewing the industry at large, the decision of the President may be conceded to specify a fair price to be paid at the mine for bituminous coal. It will be possible for the industry to quote that figure in the courts and to the public should the industry at any time endeavor in any way to maintain that price. No one can be sure that the President's price will hold as against cut-throat competition should the demand be unequal to the supply, as may well happen shortly or, at least, after the war. The public has a disposition to rely on the President, and as the price he has made is in general by no means a starvation price, it may serve as a basis for an argument for fair prices that will carry conviction with it. The coal men must admit that the price of coal is at any time apt to sag in some parts of the country below the price declared fair by the President.

Another comforting assurance is that the price will put the wagon mines and some other mines out of business. These concerns have made trouble of all kinds for the industry. They have demanded railroad cars which the older corporations should have had and which the smaller mines used only inefficiently. They have taken men from the larger mines where machinery, better coal and better transportation methods made their work more efficient. They have paid more than the wage scale and made it necessary to give the day workers at larger mines steady work to keep them from leaving. They have been the cause of most of the labor unrest.

Some mines which started since prices for coal rose have steadily paid more than the standard wage scale. They will have to reduce their wages now, and as their mines are not so favorable to the working man's comfort they are likely to lose men from now on. They may even try to pay their men less than the union rate and lose the force they have.

The bituminous coal industry is not likely to find so much trouble in making a new scale next spring now that prices are regulated and the present schedule is more rigorously adhered to. Furthermore, the anthracite operators will profit by the more settled condition in the bituminous field.

There is further comfort to be drawn from the fact that new mines are less likely to be started and extensions made. There are at present only too many of these half-completed projects. Newly developing mines are as bad as small mines in their lavish use of men and railroad cars per ton of actual product.

Finally, after the war is over the competition for the fewer orders available will be fierce. Consequently anything which will prevent the over-stimulation of the industry will make for better conditions in the future.

Coal Cost, Now and Hereafter

Seldom do coal men meet without the question of cost being discussed. Just now there are some conditions, not entirely new, but in their importance quite unusual. At a luncheon at which about 20 coal men met, mostly retail dealers, a mining man from Harlan, Ky., declared that the operator in that district had not only to meet the wage scale and bonuses but the expense of idle time resulting from car shortage.

Short time is an ever-present trouble at the mines, the cause in the past being more often lack of orders than lack of cars. When the mine was laid idle there was a certain amount of overhead cost to pay—clerks, foremen, pumpers and sometimes fan men and fire-bosses—but for the most part this was met by keeping the work on idle days down to a minimum and letting the day men loaf at their own expense, and also by putting the men who must be kept at work on a monthly wage so that they would earn a lower daily average.

But times change. If day men are not now earning their full wage every day they leave. It is different with miners. When the mines are idle miners can work getting ready for a working day. They can, and in many sections do, mine on idle days and load on working days, and where the coal is thin, they shoot up the bottom or shoot down the top when the mines are not working. But the day man must be idle or procure company work, and herein lies the great expense of running a mine today.

The operator instanced a mine with 85 coal diggers and about 50 day men—an excessive number of the latter by the way. The mine ran only three or four days a week, for cars were scarce. Work had therefore to be found for the men nearly half of the time. The work these men did on idle days was not much wanted. It was work that cheaper men could have done readily, but \$3.50 and \$4 a day had to be paid them because that was the pay for their regular work. This item is an important one at most plants.

It is to be feared that the demoralization resulting from the making of jobs destroys the efficiency of the working days when jobs do not have to be improvised. Furthermore, when the flurry comes to an end and prices fall, the bad habits of these flush days will rise to plague the operator. Men will be prone to demand that jobs be made for them regardless of orders or cars. Then it will be more essential than ever to have checks and balances which will make work more steady. It is the biggest problem of the readjustment after the war. The industrial machine must run without dead centers, lost motion and back pressure. How it is going to be done is problematic, but it is certain that we shall not have contented men until mines work more regularly.

Department of Human Interest

An Ideal Washhouse

BY FRED M. HEIDELBERG

Mechanical Engineer, Copper Queen Consolidated Mining Co.
Bisbee, Ariz.

The construction of what the management considers an ideal washhouse was recently started at the Dallas shaft of the Copper Queen Consolidated Mining Co., Bisbee, Ariz. A great deal of study was given to this question, and it is believed that every condition that could affect the miner, be it ever so unimportant, was considered.

Sanitation was considered paramount in the design. Absolute cleanliness has to be maintained, and everything is so constructed that it can be readily cleaned. The floors are made of concrete sloping toward a common drain, to permit hosing. The lockers were designed so that they will not be a catch-all for dirt and rubbish. The tops of the lockers slope so that nothing can be placed on them, and they are made small, so that little can be placed in them. Seats are provided below the lockers.

The drying of clothes has been the chief problem in the changehouses of the camp. Without ventilation through the ceiling, clothes would not dry, regardless of the temperature of the room. In order to get the best ventilation, the rafters have been sealed and ventilators have been placed in the ridge of the roof. This method gives an almost perfect circulation of air, and consequently a good drying of wet clothes is accomplished. All clothes have to be hung on the ceiling rafters to get the greatest advantage of the circulating air currents. This gets the clothes out of the way and allows more

space to be utilized for other purposes. The dirty and clean clothes of each man are to be separated from each other and from those of his neighbor by means of galvanized iron sheets. The shower room is equipped with showers only, because in other changehouses men washed their bodies in the wash basins, and the man following washed his face in the same basin, ignorant of its previous use. This is considered unsanitary, and therefore basins have been prohibited, thus virtually forcing every man to take a complete shower bath. Both hot and cold water are provided.

Heating the changehouse is accomplished by means of 1½-in. steam pipes on the outer walls. Besides serving to heat the room, this system assists the circulation of the air currents, which augments the drying of clothes. As much light as possible is provided, consistent with good design. Windows were placed wherever and as high as possible, so that the entire room might benefit. The lower sashes of all windows can be raised and thus provide fresh air when necessary. The mine timekeeping offices are housed in one end of the building. They are not usually considered part of a changehouse, although frequently placed there in order to save the expense of a separate building. The details of design of the changehouse are given in the accompanying Fig. 1, showing floor plan, and Fig. 2, the cross-section. The building will accommodate about 400 men and 24 bosses. It covers a ground space of 130 ft. 5 in. by 30 ft., with two 20 x 20-ft. shower rooms on the back. The height of wall to rafters is 15 ft. 6 in. The foundation is of concrete and is allowed to project up as a 9-in. wall 1 ft. 6 in. above the ground, in order to keep the floor

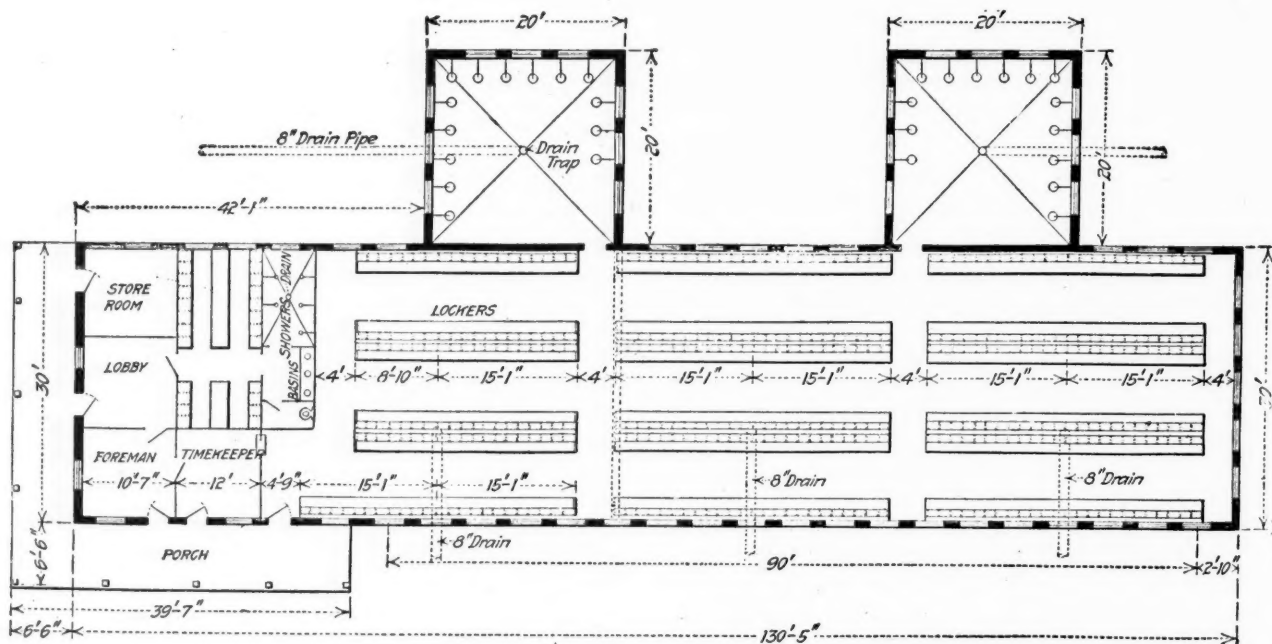


FIG. 1. FLOOR PLAN OF THE COPPER QUEEN WASHHOUSE

drains within the building. A 4 x 4-in. timber is bolted to this 9-in. wall as a bottom plate, and on it the 2 x 6-in. studding is nailed. A double studding is provided at all corners and on both sides of all openings. The outside of the studding is covered with No. 24 corrugated galvanized iron, while the inside is covered with 1 x 4-in. ceiling. The roof rafters are trussed and made of 2 x 6-in. timbers, surfaced on four sides for painting. The rafters of the truss are ceiled with 1 x 4-in. flooring, the dressed side down. Nailing strips of 1 x 4-in. timbers placed on 2-ft. spreaders are provided on this ceiling, to which the No. 24 corrugated galvanized iron is nailed. To the bottom chord of the truss the 2 x 4's surfaced four sides, that carry both clothes pulleys and the No. 18 galvanized-iron sheets, are secured. These 2 x 4's also serve as a stiffening to the bottom chord of the trusses. The ventilators are placed every 10 ft. on the ridge of the roof. They are 16 in. in diameter and are fitted with dampers that can be worked from the floor by means of safety chains. The floor is a 4-in. concrete slab covered with a 1-in. coat of cement. This floor slopes to a common drain under one line of lockers, from which the water is taken off by means of an 8-in. pipe. The construction of the shower room is the same as that of the main changeroom. Fourteen showers are provided in each room, with both hot and cold water. The hot water is heated in a sheet-iron cylinder with steam-heating plant. In this way live steam never gets to the baths. Ventilators are also provided in the roof of the shower room. The water from the shower drains to a trap in the center of the floor, from which it is removed through an 8-in. pipe. The windows are of the double-sized type, each consisting of twelve lights of 10 x 16 in. glass. The windows are spaced 5 ft. apart. Half-windows are provided over all openings in the office end of the building.

The locker system is worthy of note. The lockers are placed high up, and benches of two pieces of 2 x 12's are provided under each line of lockers. Hitherto lockers have always been built to take all the clothes and luggage a man might have. Experience with such lockers led to the development of the small locker used in this changehouse. They are made small so that nothing but hats, shoes and ties can be placed in them, thus making a far more sanitary arrangement. The clothes are to be taken care of by another method; namely, that of hanging them from the ceiling on hooks and coat hangers. The hooks are made of $\frac{1}{2}$ x $\frac{3}{16}$ -in. bars, with eye in one end and the other end split and bent up to form two hooks. The bar is bolted to an ordinary coat-hanger and is fastened to a No. 2 brass safety chain that passes over a 3-in. screw pulley and then into the locker. Each locker is provided with two clothes-hanging outfits, one for clean and the other for dirty clothes. The lockers are built of 1-in. material, 9 in. deep, 15 in. wide and

with an effective height of 20 in. Instead of building the lockers single, they are made in sections of twelve lockers, placed on 15-in. centers. This gives a better method of suspension than could be obtained with single

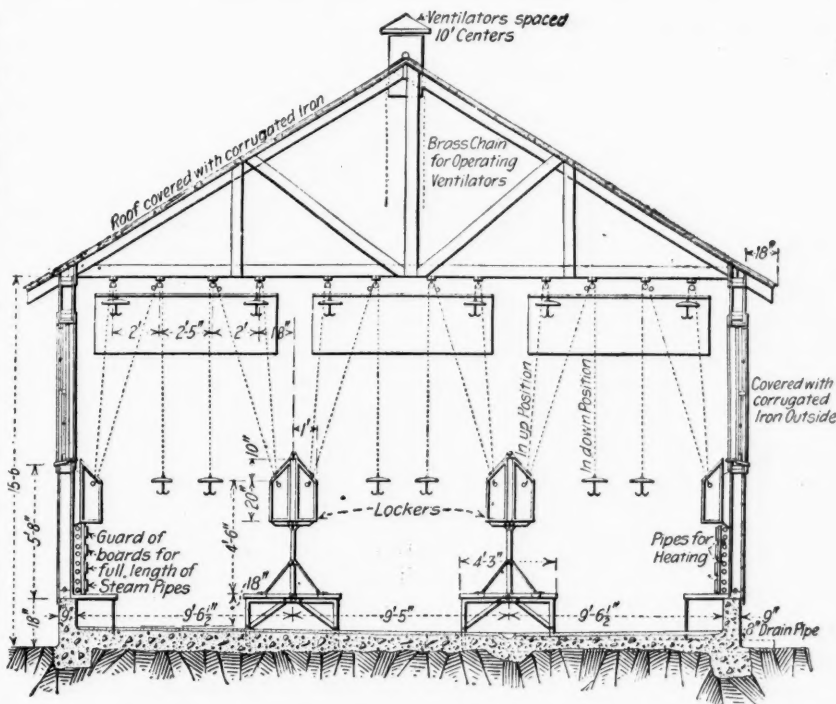


FIG. 2. TRANSVERSE SECTION OF THE WASHHOUSE

lockers. The usual ventilating holes in both bottom and top are provided. Clothes hooks and two snatches on which to fasten safety chains when in "up" position are part of the locker equipment. The lockers are supported on the same angle-iron frame as the benches, thus giving a neat, clean method of support.

In the office end of the building are the bosses' lobby and changeroom. The lobby is provided for noontime chats and consultations and for the making out of reports. The bosses' changeroom is of the same general style as the main changeroom. The timekeeper's office is situated near the men, and his window opens into the changeroom, which allows the men to report without the necessity of going outside. A small porch is provided about the office end, and this serves also to protect the occupants from bad weather.—*The Engineering and Mining Journal*.

Canadian Fuel Controlled

C. A. McGrath is the name of the Fuel Controller recently appointed by the Canadian Government. The Canadian fuel commission adopted the American rules regarding the unloading of coal, and in spite of a request from the retail coal dealers for 72 hours' time to unload cars, only 48 hours, the same as is now allowed on American railroads, was granted.

England has worked out a scheme of national coal control by which it is estimated that beginning in September railroads will save 700,000,000 ton-miles annually in the transportation of coal.

Discussion by Readers

Test of a Man's Capability

Letter No. 1—I was greatly interested in what W. R. Jones said about a man proving his capability by taking the examinations, instead of claiming that he was "just as capable as a man holding a certificate."

The test of a man's capability is in the character he bears. If I were to be asked by an official as to the kind of man that would make the best mine foreman, I would answer: Choose the man in your mine that you can trust. He must be a strong man, a live wire and able to handle every operation in the mine. He must be able to drive a mule, lay track, run a motor and perform any service required, from keeping the time of his men and superintending their work to carrying out the orders of his superiors and maintaining the output of the mine at its full capacity. He must be patient and thoughtful, though alert and active and always manifesting a sincere interest in the work and welfare of his men.

I know a man who has been a successful foreman for at least 30 years and performed every kind of work done in the mine. He is uneducated; but, during his 30 or 35 years of service in charge of mines, I cannot recall more than four or five deaths that have occurred among his men, from falls of slate or coal, explosion of gas or contact with live wires. He was always around watching to insure the safety of his men, and when he found a man working in an unsafe place, he would order him out until the danger was removed.

Nevertheless, I feel that a man should be examined and qualify as required by law, although I am not a certified man myself, since I do not intend to assume the responsibilities of the position of foreman. Certification should be compulsory in every gaseous mine, as a man should study to know the properties of gases, in order to be able to handle them properly in the mine.

In closing, let me say that the prosperity of a mine depends not only upon the confidence that the manager has in his foremen, but the mutual confidence each foreman has in his men and the men in their foremen.

Crawford, Tenn.

W. T. HALE.

Prosperity and Booze

Letter No. 4—That the liquor problem has become national in its scope is no cause for wonder. No argument is needed to prove that booze and prosperity do not go hand in hand, either in the case of an individual or the community. The two words are not synonymous, and booze is never a partner with success.

At the present time, the National Government is wrestling with the question of the prohibition of liquor. The wet and dry forces of the country are arrayed against each other in an effort to secure legislative action. Congress has apparently grabbed the bull by the horns, so to speak, in the attempt to gain a constitutional prohibition amendment that would be nation wide.

The President of the United States has appeared to favor the exemption of beer and wine from the prohibition clause, making them still an allowable national beverage. The Council of National Defense has sought to set a prohibitive tax on distilled liquors. These several attempts, coming as they do from different sources, show that the effort to eradicate this great social evil has gained much support.

There can be little doubt that a constitutional amendment prohibiting the manufacture and sale of intoxicating drink, if ratified by all the states, would be the greatest move that could be made in an effort to increase the efficiency of the industrial and laboring classes throughout the country. It can be asserted with some degree of assurance that the productive power of 20 laborers would then be equal to that of 40 under present conditions, which would mean very much in the present war crisis that promises to make such inroads on all industrial enterprises.

PARTIAL PROHIBITION AND LOCAL OPTION FAIL

Experience and observation alike have shown that any attempt to establish a partial prohibition or local option will meet with doubtful success. States that have gone "bone dry" give evidence of furnishing no permanent solution of the liquor question, because of the inadequacy of the law to prevent the smuggling of liquor across the border from other states where its manufacture and sale are not prohibited. The intoxicating beverage is brought into the state from wet territory, in all manner of ways, and commands fancy prices to compensate the lawbreakers for the risk they incur.

Again, those living on the border can cross the line, for a few cents carfare, and indulge in a season of revel and debauch. The expansion of railroad and trolley systems has made the world a very small place and, to restrict the evil of the drink habit, it is necessary for the states to act as a whole, in one determined effort to expel the curse from the country.

Notwithstanding the difficulties encountered, however, the "bone dry" law has had a noticeable effect in mining communities. Where the saloon has been driven from the town, there is far less drinking than when it was an ever-present temptation to beguile the unwary. The drink habit is made more expensive where the miner must procure liquor from outside the state in order to satisfy his cravings.

The fight against liquor has been greatly assisted, also, by community welfare work, whereby harmless and attractive diversions have been substituted for the saloon and the so-called "poor man's club." It is a natural law that evil is most effectively overcome by substituting good in its place, and the simple attractions of music, moving pictures, games, dancing and recreation have all been utilized to wean men from the saloon. Many have come to realize that wholesome food and pure water are essential to a healthy condition of the mind and body.

and that a brain steeped in alcohol is incapable of performing its functions properly.

While booze is universally recognized to be a great industrial and social evil, it hardly seems feasible to adopt the drastic treatment applied by a West Virginia coal company, which is reported to have dismissed all employees from its service who were known to drink. In the present scarcity of labor it would seem that some other remedy than this must be found.

Thomas, W. Va.

W. H. NOONE.

Need of Drawing Timber

Letter No. 11—The discussion of the need of drawing timber in longwall work is one closely related to the success of the operation. If the principles of longwall mining were better understood, and the advantages of that method more fully realized, the system would be adopted in many coal fields where it is now a stranger. In this, as in everything else, success depends on knowing what to do and doing it right. We learn much from the experience of others.

I was greatly interested in reading the letter of R. J. Pickett, *Coal Age*, July 7, p. 28, who argues in favor of leaving the timbers standing in the waste. I cannot but feel that he must have worked under peculiar conditions or he certainly would have experienced trouble. I learn, however, that the practice of leaving the timbers standing in the waste is quite general in the mines of northern Illinois. It seems probable that this practice has grown out of the difficulty of compelling miners to draw their timbers as the coal face advances.

EARLY PRACTICE WAS TO DRAW ALL TIMBER

Formerly, the success of longwall mining appeared to depend very largely on withdrawing all the timber from the waste and building good packwalls. Later, as the miners required close watching, in order to prevent them from leaving a part of the timbers standing, which always gave much trouble, the plan was adopted gradually of leaving all the timber and not attempting to withdraw any of it except in the roadpacks, as has been explained. This practice seems to have been successful in the longwall mines of Illinois.

Allowing, however, that there are conditions that will admit of the timber being left in the waste and not withdrawn, there are many arguments in favor of the old practice of drawing every post. First, the cost of timber is too high to permit it to be wasted. Second, a more uniform settlement of the roof can be secured by removing the posts and building good packwalls. Third, there is less danger of gob fires being started in the waste where all the timber is removed. I believe, also, that good ventilation would be more easily secured by the removal of the timber, owing to a more compact settlement of the roof on the gobs.

I agree with Mr. Pickett in his claim that it is cheaper to hoist a car of rock or slate and dump it on the surface than to unload the car in the mine. Against this increased cost, however, must be counted the saving in the cost of timber by using the refuse to build packwalls. In my opinion, no rock should be taken to the surface in longwall work, until there is an excess over what is required for building good packwalls. There have been instances where it has been necessary to bring

material from the surface into the mine for this purpose. It seems to me that the practice of leaving the timber in the waste has been forced upon operators by the bad results that came from miners failing to draw all their posts, which would, of course, cause much trouble.

In a certain longwall mine, I remember, all the timber was withdrawn when the work was first started, and the scheme worked well until the face had advanced from 600 to 700 ft. from the bottom of the shaft. Then the trouble began. In one part of the face the coal would not fall, while the roof would break away close to the coal in another place. Occasionally, a heavy fall of roof would stop a large portion of the work, by closing a whole section of the face.

TIMBER LEFT IN WASTE CAUSED DISASTER

These conditions were so unsatisfactory that the company started an investigation and called several good longwall mining men from Scotland and Wales. They were expert longwall men and had been accustomed to drawing all the timber as the face advanced. Examination showed that the miners had been careless and that many posts had been left standing that should have been withdrawn and this was decided upon as being the cause of all the trouble.

Mr. Pickett states that 99 per cent. of the props left standing in the gob are broken "just beyond the safety line." It is hard to tell what he means by the "safety line." If he means the line where the roof starts to break and fall, I think this could be prevented by adopting a different method. It is often a good plan to taper the posts at one end or to set them on a mound of dirt, using a cap above the post. By this means the posts will not be broken, but will take the weight of the roof gradually. The settlement is made more uniform and the break avoided.

OSTEL BULLOCK.

Herrin, Ill.

Extinguishing Fire in a Gassy Mine

Letter No. 6—Referring to the question of extinguishing a fire discovered at the head of an intake when several chambers turned off the entry are generating gas, as suggested in the inquiry of *Coal Age*, June 9, p. 1012, let me say that the first thing to be considered is obtaining the necessary help and the material that will be needed in order to successfully fight the fire.

Having hastily summoned the mine foreman and competent men, including at least two firebosses, all being equipped with safety lamps, and having procured such tools and material as axes, hammers, nails and canvas, proceed at once into the mine. On reaching the entry where the fire is located, the firebosses should make a careful inspection to ascertain the gaseous condition of the air circulating through the rooms. A fireboss should remain at this point to observe the condition of the air current, until the fire has been extinguished or sealed off.

My experience in the fighting of several mine fires, in places generating gas, makes me conclude that a good water supply is the most efficient means to be employed for this purpose. If water is available there should be little trouble in extinguishing the fire at the head of this entry. However, assuming that there is no such supply

at hand, the best method to adopt, in that case, will be to seal off the fire by building a stopping just inby from the last crosscut, if it is possible to reach and work at that point.

If the fire has gained such headway that men cannot approach the last crosscut, it will be necessary to build two stoppings, one on the intake and the other on the return at a point further outby. Before doing this, the air must be short-circuited by opening one of the stoppings outside of the last one. In all cases the fire must be fought from the intake side and care must be taken to safeguard the men against a fall of roof, in case the heat of the fire has made such a fall liable to occur. There should be no delay in starting the work as quickly as possible after the fire is discovered.

Wellston, Ohio.

R. J. PICKETT.

[This letter will close the discussion of "Extinguishing Fire in a Gassy Mine."—Editor.]

Importation of Chinese Miners

Letter No. 7—In my opinion, Chinese labor should not be allowed to come to this country, for many reasons. There is no doubt that such a movement would cause widespread dissatisfaction among American workmen. The Chinese mode of living is such that American labor could not compete with them along that line. The importation of any large numbers of Chinese to work in the mines would mean the lowering of the standard of mining, which would soon take on an aspect that would change the character of the industry.

If once the Chinese are brought to this country, they might work well enough for a time as laborers, but the problem would certainly be presented, later, of deciding what to do with them when there was not the same need for their work in the mines. China has unlimited mineral wealth, and, no doubt, the Chinese are interested in learning American methods of mining, in the same manner that Japan has been studying modern methods of warfare, both in Germany and in the United States, with the view of making Japan a world power after the war.

At the present time, the European War has absorbed the attention of the world. Our eyes are fixed on Europe, and, according to the old saying, "He who looks far away does not regard danger that is near," we are prone to think too little of dangers that, at another time, would absorb our whole attention. The importation of Chinese, to work in American mines, would be a grave mistake and endanger the coal industry on which the prosperity of the country so largely depends.

—, Canada.

MAC.

Letter No. 8—Referring to the question of whether the importation of Chinese miners to this country would relieve the shortage of labor that seems so acute at the present time, it may hardly seem consistent for me, being an immigrant myself, to oppose this suggestion. However, let me say that before attempting such a move it would be well to study the conditions that have brought about the present situation.

As has already been suggested in this discussion, the present output of the mines is far from normal, owing not only to the shortage of labor but also to the scarcity of cars for shipping the coal mined. Again, one is sur-

prised when reading the labor situation, as reported in *Coal Age*, to note the disturbances that are permitted in the mining regions.

It seems incredible that, at the present crisis, the differences of miners should be allowed to exist to the extent that they interfere with the uniform production of coal and decrease the output of the mines. If it is not possible to find means of adjusting the differences existing between the classes of labor now employed, how can we expect to be able to handle still another class of foreign labor?

IMPROVE CONDITIONS IN THE MINES FIRST

After strikes at the mines have been eliminated and every means adopted to increase the output of coal, by employing the most modern and up-to-date mining machinery and equipment, if there still remains a shortage in the output of coal it will then be time to consider the importation of foreign labor; but this would seem unwise as long as there is so much idleness at the mines and imperfection in the methods employed both in mining and transporting the coal.

The statement was made that "France is wise, why can't we follow suit?" It must be remembered that France has possessions in Indo China, which gives her the right to use natives from that country if she needs them. Of course, we can import labor from China, the same as we have already used European labor in our mines.

I do not question the statement that "The Chinese are good miners." I have heard the same report made by French soldiers on their return from Indo China. They described the Chinese as laborious and docile. It is a matter of regret, however, that there is a shortage of labor so early in the war crisis. What will it be later?

GASTON LIBIEZ.

Peru, Ill.

Letter No. 9—Being somewhat of an efficiency student, the labor problem always strikes a responsive chord in my make-up, and this is my excuse for adding a few words to what has already been said against the importation of Chinese miners into this country.

It was with much pleasure that I read the strong arguments advanced by W. E. Richards and William Crooks, in their letters, *Coal Age*, Aug. 11, pp. 251 and 252. While our young men are giving their lives and sacrificing time and opportunity in the support of the principle that underlies all democracy; namely, "government of the people, for the people and by the people," it is our duty to stand firm by the same safe principle.

As Mr. Crooks has suggested, the proposition of importing Chinese miners is one to be carefully studied. A review of the situation shows that our coal mines are not working more than 60 per cent. of their capacity, because of the car shortage that prevents the shipment of the coal mined. As has been suggested, every means should be employed to increase the efficiency of the coal industry, in all branches of the work.

Let me say, here, that the solution of the transportation problem would be much assisted if the great river systems on which the Government has spent millions of dollars could be utilized for this purpose. I believe that much of the coal that has depended on the railroads for transportation could be shipped by water.

at least a part of the way. Where this is possible, it would greatly relieve the burden that now falls on the railroads.

May I ask, Why would it not be worth while to consider securing the labor engaged in those "snow bird" operations, located on hillsides where the coal is of little value and it is necessary to wagon the output three or four miles to a point of shipment? Such operations cannot employ their labor efficiently, and much would be gained if they could be utilized in a place where their labor would count. The same labor that will load a car of coal with shovels in a given time, if employed in a well equipped mine, would cut five cars of coal by machines, and there would be equal gain in other directions.

PATRIOTIC DUTY TO INCREASE EFFICIENCY

In the present war crisis, the patriotic duty of all coal operators and miners is to exert every effort to increase their efficiency. Every operator should employ the most up-to-date equipment, replacing horses and mules with locomotive haulage or some type of rope haulage adapted to the particular conditions existing in the mine.

Wherever practicable, machinery should be employed in the mining of the coal, drilling holes and in haulage, drainage and ventilation.

Last, but by no means least in its importance, is the injunction to all mine workers to cut out the booze. Nothing so disorganizes the force and decreases the efficiency of mining operations as the drink habit, which has so largely prevailed among mine workers. I know of one mine that has difficulty to muster three-fourths of its force after pay day, and many of those who work are mentally and physically unfit. In my opinion, our district alone can produce at least 15,000,000 more tons of coal the coming winter if the men would cut out the booze.

When we remember that our boys in uniform are not permitted to drink, why should the same restrictions not be enforced on the men whose duty it is to provide heat and light for the loved ones the boys leave at home? Why should the saloon be permitted to take this booze money when the nation is in want?

IMPORTATION OF MINERS NOT REQUIRED

In regard to importing foreign labor to take the places of those who are called to the front, it is well known that the class of people suggested for this purpose cannot be assimilated and their removal, later, when they are no longer needed, will be difficult. In my opinion, such importation is not required. The suggestion seems to have been made without sufficient thought of the danger that may result.

In closing, let me say I am convinced that the coal production of this country can be increased 40 per cent. or more by employing more efficient methods. The same applies not only to the mining of coal, but to all farming and manufacturing interests and their allied trades. Workers in every branch of every industry should exert themselves to the same end.

It is my hope that the present crisis will arouse us from our lethargy, get us out of the ruts in which we are prone to travel and give everyone a new vision that will enable him to realize there is something else to be

got than dollars. If the present war will make us regard the common good before the individual profit, it will be a godsend indeed.

Masontown, Penn.

J. O. DURKEE.

Practice of Safety First

Letter No. 1—No one can read the numerous references, in *Coal Age*, to the safety-first movement in coal mining without feeling the growing need of practicing more what we preach. I do not wish to be understood as knocking the safety-first movement. My only desire is to call attention to the abuses committed in its name.

The success of the safety-first movement depends on three prime essentials: (1) A set of rules and regulations adapted to promote safety under the conditions existing in the mine. (2) The selection of competent men to act as safety inspectors, who are authorized to see that the rules and regulations are not violated. (3) Cooperation on the part of every man working in the mine.

It is an easy matter to draft rules and regulations that, if strictly obeyed, would promote safety. Indeed, it would seem that this was practically all that the safety inspectors accomplished, in a certain large company for which I worked some time since. The rules were good but not enforced for one reason or another; and, it is needless to say, they soon became a dead letter.

SAFETY RULES GOOD BUT NOT OBEYED

Unless competent men are employed and authorized to see that rules are obeyed, it is useless to expect cooperation on the part of the men. I have in mind one large company in West Virginia that adopted one of the best set of rules for the promotion of safety in mines that it has been my pleasure to read. One of the rules stated that an assistant mine foreman should not have more than 30 men under his charge. These rules, however, were made a farce by the selection of men whose duty it was to see that they were obeyed, but who were wholly incompetent for that work.

I have known instances where superintendents have appointed men for this duty who were never in a mine in their life before. Men unfamiliar with mining work and conditions cannot be expected to be competent to act as safety inspectors in mines. They will either show their incompetence by asking miners to do things that are useless, or even contrary to the rules of the mine; or they will permit miners to follow their own inclinations and do as they please. In the first instance, they quickly lose their power over the men, who are not slow to recognize their inability to instruct concerning matters of safety. In the latter instance, discipline is wholly destroyed, because there is nothing to prevent each one from doing as he pleases.

INCOMPETENCE OF A MINE OFFICIAL

Recently, I had occasion to observe the incompetence of an assistant foreman who also performed the duties of fireboss, in a mine where I was obliged to take some measurements. Knowing that the mine generated gas and had been closed down for a short time, I notified the superintendent to start the fan running and to send

a fireboss with me into the mine. He replied that the fan was running and he would send the best assistant foreman and fireboss he had.

In one section of the mine, the rooms we were to measure went a short distance to the rise and then dipped to the face. This entry generated some gas and, as we started to measure up the first room, the assistant told us we could take our lights to the top of the hill but to go no farther, until he had examined the face. I soon found that this man could not detect gas had there been any in the place. In fact, his safety lamp was not properly put together, as it had no gaskets and the gauze was rusted so badly that a slight pressure of the thumb broke the wires.

SAFETY FIRST PREACHED BUT NOT PRACTICED

It may cause some surprise to state that this company has taken a leading part in boosting the safety-first movement, both by lectures for the men and the display of safety signs in and around the mine. In my opinion, they could accomplish more by using the money expended in this manner to employ a competent man as fireboss, at a slightly increased salary. The remark was made by one party that the company appeared to "expect a chalk line and a safety sign to hold up a piece of bad roof."

This same company urges all of its employees to offer suggestions in regard to the promotion of safety, and to report any dangerous practices observed in the mine. These instructions seem like so much hot air, as reports of unsafe conditions have been met with the rejoinder "If you will attend to your business, the company will take care of the mine." Let me urge, again, that we practice more what we preach. ENGINEER.

—, W. Va.

Supervision in Mining

Letter No. 2—Like Thomas McDermott, in the issue of *Coal Age*, Aug. 18, p. 294, I am surprised that anyone would think it necessary to refer to the mines of Germany for an illustration of the thorough supervision of miners.

My memory carries me back to the time when I was employed as a deputy overman, or mine examiner, in England. My duties, as deputy, were very different from the duties of a fireboss in this country. While they were all right for the conditions in those mines, the same duties would not be required in mines in this country. They emphasize, however, the importance of a close supervision of the work by competent men.

In the mines in England there were two shifts of coal diggers and two shifts of deputies, but only a single shift of boys and drivers or pushers. My duties took me to the mine about a quarter to two in the early morning. On arriving at the mine, I examined the "glass" or barometer and read the water gage, recording each of these readings on the board at the head of the shaft and signing my name. Each of the deputies did the same.

At the bottom of the shaft we met the chargeman, who advised us in regard to the condition of our respective districts. Proceeding in by to his own station, each deputy removed the most of his clothing, hung up his spare lamp in its place, took his ax from the chest

and started to examine the district in his charge. There were about 30 places in each district and these must be examined for gas, bad roof, amount of props, rails, ties, etc. At the same time the deputy must repair any curtains he may find damaged and note the amount of brushing needed in each place.

It was necessary to complete this work within two hours, in order to be back at the shaft bottom before the men got there. Each deputy entered a report of his examination in a book. The report was made and signed in duplicate, the deputy giving the original to the foreman or pit boss, while the duplicate copy was left in the book for reference.

After making his report, each deputy was obliged to call the names of the miners who worked in his district, examine each man's lamp and inform him of the condition of his place. In some cases the men were searched for matches or other inflammable material. The deputy recorded the time when each man went in to work and noted any extra work that he was to perform, from which his pay was computed.

Having completed the work of sending the men in to their places, the deputy started on his second trip around the face. His duties, for the next 2 or 2½ hours, consisted in laying switches, sawing props, renewing ties in the tracks, repairing doors and looking after the general safety of the men.

FIRST-AID QUALIFICATIONS OF DEPUTY OVERMEN

The boys, drivers and pushers now come down the shaft, and the deputy must meet them at his station, examine each one's lamp and tell him what has to be done. During the remaining time of the 8-hour shift, the deputy was kept busy going from place to place and caring for the men.

An interesting feature in the work of the deputies was the fact that each one had a first-aid outfit in his chest. One of the qualifications of a deputy was that he could use this outfit in an efficient manner whenever required. An advantage that the deputy, in England, possessed over the fireboss in this country was that he was promoted to any vacancy that might occur, provided he had obtained a certificate making him eligible to the place. It was not necessary for him to belong to some order or have a pull with the company or with his foreman, as is too frequently the case here.

By way of comparison, let me cite briefly the duties of a fireboss in Indiana. For example, in our mine, shooting off the solid prevails and fires are frequent, as a result. In order to locate these fires and prevent their gaining any headway, it is necessary for me to enter the mine at midnight. Otherwise, it would be necessary to employ a separate man to go around the mine after the shotfirers had performed their work, in order to make sure that no fires had started and that the doors and brattices were in their proper places. Not only would this mean an extra expense, but it would be difficult to secure men for such work.

The work of supervision of miners requires the exercise of much tact and judgment when instructing miners what they must do or how they must perform their work. Strict discipline is necessary, and when the men fail to follow the instructions given them their turn should be stopped until the work required is done.

Clinton, Ind.

TIMOTHY GOLDON.

Inquiries of General Interest

Number of Mine Cars Required

Kindly permit me to submit the following question in regard to the number of mine cars that will be required to maintain the continuous and uniform operation of a mine putting out 1600 tons of coal in a day of 8 hours. The capacity of the cars is 2 tons. The mine is divided into four working sections, the coal being hauled from four separate partings, two being more than a mile and the other two about half a mile from the tippie.

The roads are laid with 50-lb. tee iron, and the tail-rope system of haulage is employed. The production of coal in each section is such that the hauls are well balanced, the engine hauling from 25 to 40 cars in a trip. I want to ask how many cars, in good running order, will be required to produce this output under the conditions described?

SUPERINTENDENT.

West Leisenring, Penn.

In replying to this question, we will assume the two longer hauls are each 6000 ft. in length, while the two shorter hauls are each, say 2400 ft. long. For the same speed of winding, the number of trips on each haul will be in the inverse ratio of the distance hauled, or as 60:24 or 10:4. That is to say, for every 10 trips hauled 2400 ft. there would be but 4 trips hauled 6000 ft.

Without going into detail, a little calculation shows that 10 trips of 24 cars on each of the two shorter hauls, and 4 trips of 40 cars on each of the two longer hauls will give an output of $2(10 \times 24) + 2(4 \times 40) = 800$ cars, which makes the required output of $2 \times 800 = 1600$ tons a day.

The Fireboss in Colorado

A question recently arose, here, in regard to the extent to which a fireboss who has not been certified is permitted to act in the examination of a mine, by virtue of the permission granted him to act in that capacity in the mine in which he is employed, until the time for holding the next examination.

Assuming that the person here referred to has been employed in a portion of the mine generating no gas and is granted permission to act in the capacity of fireboss in the mine in which he is employed, as just stated, until the next examination is held, would he be authorized to act in the same capacity in a portion of that mine wherein gas is generated?

An instance of this kind occurred recently, when an applicant presented himself before a board of examiners, hoping to secure a first-class mine foreman's certificate. As a result of the examination, he was awarded an assistant mine foreman's certificate in a nongaseous mine. At the same time, on his making application, he was given permission by the board to act as fireboss in the mine in which he was then employed.

The circumstances, in this case, would seem to indicate that since the applicant was able to secure a certificate entitling him to act as assistant mine foreman in a nongaseous mine, the letter permitting him to act as fireboss in the mine in which he was employed could not be construed as authorizing him to act, in that capacity, in a portion of the mine generating gas.

INQUIRER.

_____, Colo.

It appears that the Colorado mining laws contain no provision requiring a mine owner or operator to employ a certified man to act as fireboss. Such a requirement may be implied, however, by the provision of sec. 40 of the mining laws, which specifies that the board of examiners appointed to examine candidates for the office of mine inspector shall also meet "for the purpose of examining persons for the following positions: Company mine examiners, mine foremen, assistant mine foremen and firebosses, and to issue certificates of competency for same."

Sec. 44 provides for the employment of "a competent and practical mine foreman for every mine where 10 or more persons are employed underground," but authorizes the mine owner to act as mine foreman, provided he can produce satisfactory evidence that he is competent to fill the position himself.

Sec. 69 requires the mine owner to "employ a sufficient number of firebosses in order that each mine can be examined in accordance with the provisions of this act," but does not specify that they must be certified to act in that capacity.

The provision made in sec. 40 for the temporary employment of an uncertified person to act as shot-firer until the next visit of the mine inspector, and the provision in sec. 46 for the temporary employment of an uncertified person to act as mine foreman, in case of absence or disability of that official, would seem to imply that the same privilege may be extended to an uncertified person to act as fireboss.

In the absence of anything to the contrary, in the mining law of Colorado, the chief mine inspector would certainly have the power to grant such permission on his own authority. However, we agree with this correspondent, that the permission granted by the examining board does not appear to have contemplated the examination of a mine generating gas by a person to whom has been granted a certificate restricting his actions to a nongaseous mine.

It would seem that the provisions of the Colorado mining law are not sufficiently explicit in this regard. The permission granted this candidate to act as fireboss should have been restricted to his capabilities as determined by the examination. The conclusion is that while the law has not been violated, the safety of the mine has been jeopardized.

Examination Questions

Illinois Mine Inspectors' Examination, Springfield, July 24, 1917

(Selected Questions)

Ques.—Explain the law of the diffusion of gases and its effect on their behavior in mines. Give the rule, and show by example how to find the comparative velocity of the diffusion of different gases.

Ans.—The law of the velocity of the diffusion of gases is that the velocity varies inversely as the square root of the densities of the gases. This law has an important bearing on the mixture of gases formed in mines. For example, if pure methane or marsh gas (CH_4) diffuses into air, the relative densities of air and this gas being 1 and 0.559, the resulting mixture of gas and air will be determined by the following ratios:

$$\frac{\text{Gas}}{\text{Air}} = \frac{1}{1 \div 0.559} = \frac{1}{0.747}$$

In other words, the density of this gas being less than that of air, its velocity of diffusion is greater in the ratio of 1:0.747. The percentage of gas in the mixture would be $100 \div 1.747 = 57.2$ per cent. Calculating the density of this mixture of gas and air, it is found to be 0.75, nearly. The continued diffusion of resulting mixtures into air produces mixtures whose densities constantly approach unity or that of air.

In some instances where pure marsh gas comes in contact with carbon dioxide, in the absence of pure air, a mixture is formed consisting of 1 vol. of carbon dioxide and 1.654 vol. of marsh gas. This mixture, being lighter than air and found at the roof, has often confused the fireboss, because it gives a gas cap that disappears so quickly that it is not usually observed; but the lamp flame is dimmed and finally extinguished by the gas. Because of the momentary appearance of the flame cap, which disappears quickly, this mixture has been termed flashdamp. It has the peculiar characteristic of extinguishing a light held at the roof.

Ques.—What constitutes an efficient and safe hoisting plant for a coal mine? Describe in detail from the foundation of the engine to the delivery of the car at the top of the shaft.

Ans.—Beginning with the engine, this should be a duplex engine with cranks set at right angles on the shaft. For deep winding, it is generally preferable to employ a direct-acting or first-motion engine, direct connected to the winding drum whose diameter should not be less than fifty or sixty times the diameter of the rope. The winding drum must be equipped with a good strong brake capable of holding the loaded cage anywhere in the shaft.

The engine must be firmly set and bolted to a strong foundation of concrete or masonry, whose mass or weight is sufficient to absorb the vibrations due to hoisting. The hoisting rope should be a 6-strand, 19-wire cast-steel hoisting rope having a diameter that accords

with the load to be hoisted, including the weight of cage, car, coal and rope, with the added friction of hoist and allowing a suitable factor of safety, say from 5 to 10, depending on the depth of the hoist.

A well-designed steel tippie and headframe should surmount the shaft, carrying a headsheave whose diameter is at least equal to the diameter of the winding drum. The shaft is equipped with guides, automatic safety gates, strong cages having good safety catches, hoods and car stops for holding the car on the cage. There should be a good signaling apparatus for signaling between the top and bottom of the shaft. Speaking tubes are often employed or telephone communication is had between the surface and the shaft bottom. The caging arrangements, at both the bottom and top of the shaft, should be such as to permit one car to be pushed onto the cage as the other is shoved off.

Ques.—The quantity of air passing in a certain district in a mine is 10,000 cu.ft. per minute, and it is charged with gas to the amount of 3 per cent. The ventilating pressure in this mine gives a water gage of $2\frac{1}{4}$ in. A fall on the main intake airway has so reduced the volume of the air current that the water gage reads only 1 in. Determine the percentage of gas in this current.

Ans.—In answering this question we assume that the fall on the intake is outby from the mouth of the district, which was passing 10,000 cu.ft. of air per minute under a $2\frac{1}{4}$ -in. water gage before the fall took place. The result of the fall was to block the passage of air through the mine, and as a result of the reduced quantity of air passing in the district, the gage at the mouth of that district fell from $2\frac{1}{4}$ in. to 1 in. Since the quantity of air in circulation, in that case, would vary as the square root of the pressure or water gage, the quantity ratio is equal to the square root of the water-gage ratio. Then, calling the reduced quantity of air x , we find,

$$x = 10,000 \sqrt{\frac{1}{2\frac{1}{4}}} = 6667 \text{ cu.ft. per min.}$$

Since the original current contained 3 per cent. of gas, the volume of gas produced in this section of the mine is $10,000 \times 0.03 = 300$ cu.ft. per minute. The percentage of gas after the current has been reduced by the fall is, therefore, $300 \div 6667 = 0.045$, or 4.5 per cent.

Ques.—If a fan making 100 r.p.m. produces 40,000 cu.ft. of air per minute, how much air should the same fan produce when its speed is increased to 125 r.p.m.?

Ans.—Roughly speaking, the quantity of air in circulation will vary directly as the speed of the fan, or, in this case, in the ratio, 125:100, or 5:4. This would mean a circulation of $\frac{5}{4}(40,000) = 50,000$ cu.ft. per minute.

More accurately, however, the fourth power of the speed ratio equals the fifth power of the quantity ratio, which gives,

$$Q = 40,000 \sqrt[5]{(1.25)^4} = 47,800 \text{ cu.ft. per min.}$$

Coal and Coke News

Harrisburg, Penn.

Anthracite coal operators were gratified by the prices of anthracite at the mines as fixed by President Wilson, but bituminous operators, especially those operating the smaller mines, do not take kindly to the prices as set by the President.

In the anthracite region the figures do not materially differ from the circular prices of the large coal operators. The price fixed for pea coal is an advance of about 90c. The absolute fixing of rates, even if not below the prices now maintained by the leading hard coal companies, will, however, result in a material cheapening of the product to the public, as it cuts out the speculation of coal dealers and jobbers.

The prices fixed by the President in the anthracite region are the figures arrived at by a Government commission which investigated the cost of production. The anthracite companies could not operate their mines on prices much less than those set by the President. Most of them will make but little profit on the prices as fixed.

In finally recommending the rates fixed for hard coal, the commission in charge of fuel at Washington had the advantage of a complete knowledge of every part of the coal business in this state, and received the hearty cooperation of the operators, who aided special Federal investigators in an inquiry lasting two months. The leading retail dealers have already permitted a complete audit of their books, and based on their own calculations of the business done in the last four years, they are of the belief that they will be allowed to go ahead with the prices already established or that if the rate is fixed it will be commensurate with the charges in vogue.

In computing overhead charges the majority of retail dealers point out that in the last six months their expenses have gone up at least 6c. a ton.

By Government standardization of anthracite, the wholesale operators state that they would be protected from any further public criticism, and that it would be up to the retailer to give the consumer the coal at a price that is fair. Experts who have aided the Federal Trade Commission, said that it was generally admitted that a profit of 25c. a ton was fair, but that many of the small dealers added home expenses to their business outlay, bringing in some cases a showing of 6c. a ton profit on their books.

In the bituminous region where the news of price fixing caused a sensation, the United States Supreme Court may be called upon to settle the new bituminous coal list as fixed by the President.

Coal operators let it be known that they were considering a proposition to fight the decision on the ground that the prices, as fixed by the President, will make them lose in some cases 50c. or more on every ton mined. The former rate was \$3 a ton for run-of-mine coal, compared with \$2 a ton in the new list. Some operators declare it costs them \$2.50 to get the product out, and the list imposes an undue hardship.

According to operators and their attorneys, the point to be raised is whether the paragraphs in the bill pertaining to coal are constitutional. It is said the question will be taken up at a meeting of the National Coal Operators' Association to be held at Pittsburgh with the idea of having a committee appointed to visit the President and go over the situation with him. Unless prices in manufactured products are fixed in the same proportion as fuel, the charge of discrimination, the operators say, will be brought in their complaint. They are chary about making an official statement, in view of the fact that the question is one that affects the Government and the country in time of war, and feel that decided opposition may be construed as treasonable.

The small operators claim that if the President's order is enforced it will mean ruin to them and force many mines to shut down at once.

Wagon mines, as mines which have no railroad facilities are called, will inevitably be compelled to shut down. They allege

the same thing will happen to a number of mines producing only two or three carloads of coal a day. Under present conditions it costs these small bituminous operators from \$3 to \$3.50 a ton to put the coal on the cars.

Many of the small operators believe that the President will not attempt to enforce this order once the absolute impracticability of it becomes evident.

Operators in the central Pennsylvania district declare the Government is defeating its own objective—increased production—by taking away the incentive for mining coal. Some declare they will not produce coal at \$2 per ton and lose money. Rather, they will shut down their mines or turn them over to the Government.

If these prices are allowed to stand, rate experts here say there will not only be a complete reorganization of railroad freight rates, but a shift in the coal-producing centers that will leave large portions of the Clearfield district completely out of the game, so far as producing coal for shipment is concerned.

Coal rate hearings before the Public Service Commission have developed the fact that the arbitrary rates fixed by the Pennsylvania in the old rebate days determined the lines of development in this state so far as the coal industry was concerned.

A desire for tonnage on the part of the railroads led them to penalize the districts that had thick beds and which could produce coal cheaply, in order that the districts that had thin beds and which could not produce coal cheaply might continue to ship. As a result of the rate structure erected by the railroads, the public never got the benefit of the fact that some districts could put coal on the market at a much cheaper price than others.

The Pittsburgh district has always been able to mine coal for less money than operators in the Clearfield district. The West Virginia operators could mine cheapest of all. The railroads, however, fixed rates that brought the product of all the operators to Tidewater at about the same figure.

If the President's figures on bituminous coal stand, West Virginia, Kentucky, Virginia and the Connellsville districts will be able to keep in the game and increase their outputs. The Pennsylvania-Clearfield district, however, will have to reduce its output. A readjustment of freight rates would be inevitable. The result would be that while the public might ultimately benefit tremendously, investments in thin-vein operations in the Clearfield district would be sacrificed.

One of the first results of the President's order was felt in this district, when 40 miners went on strike at the Jefferson mine of the Campbell Ridge Coal Co., located near Phillipsburg. The miners had been receiving from \$1.25 to \$1.50 a ton, when they were cut to the union scale of about \$1 a ton they promptly laid down their tools. It is stated that trouble is brewing at other mines.

Announcement was made on Aug. 25, that the general meeting of the bituminous coal operators of the United States, which was to have been held in Pittsburgh on Aug. 29, to protest against President Wilson's \$2-a-ton coal price, has been postponed.

Commissioner J. D. A. Morrow, of the Pittsburgh Coal Producers' Association who was making the arrangements for the national gathering, said that the directors of the national association of coal producers decided that since it would be impossible to gather data to submit to the operators at the time set for the meeting, it must be postponed.

The directors of the national organization meet in Washington (Aug. 28), to try and decide on a date for the general meeting. In the interim men are gathering all the data to show the effect of President Wilson's order fixing the price of coal at \$2 a ton at the mines.

United States Senator Boise Penrose, of this state, is preparing a speech on the coal situation, which he expects to deliver to the Senate at an early date. Representatives of all the large bituminous coal-producing interests of the state are in Washington, and have consulted with

Senators Penrose and Knox, who always keep in close touch with the coal situation.

At a recent meeting of the directors of the Anthracite Forest Protective Association, which is composed of anthracite operators, various angles of the forest-fire fighting policy as planned by the association, were discussed. In addition to a publicity campaign the directors decided to erect three lookout houses for their fire wardens. One will be on the highest point (1882 ft. above sea level) on the Broad Mountain close to the State Highway from Mauch Chunk to Hudsonale. These towers will be supplied with fire-fighting tools and telephones and will command a view for at least 25 miles in clear weather.

The district to be watched comprises portions of Northampton, Lehigh Bucks, Carbon, Luzerne, Schuylkill and Northumberland counties. It is the aim of the association to prevent the customary fires which annually sweep over thousands of acres of timberland. Efforts will also be made by the coal companies to have the railroad companies take extra precautions to prevent the emission of sparks from locomotives.

PENNSYLVANIA

Anthracite

Pottsville—The Philadelphia & Reading coal-storage bins at Landingville several miles south of this city, which have a capacity of more than a million tons are now being filled, and within two weeks two of the larger ones have been made ready for winter use. The mines and washeries are working full handed and railroad men are working overtime.

St. Clair—Changes to be made at the Wade breaker, of the Philadelphia & Reading Coal and Iron Co., will permit of culm being run through it and coal extracted for market purposes. The abandoned Pine Forest workings in the same district are being surveyed and the virgin coal will be removed and prepared for market. The big culm banks, west of here, together with the material taken from the Pine Forest banks, will be run through the Wade breaker.

Minersville—Thomas Shelko and Charles Calatsine were instantly killed at the Lytle colliery of the Lytle Coal Co., on Aug. 21, and two laborers are in a serious condition at the Pottsville Hospital, from injuries received in the same accident. The men were engaged in driving a long tunnel when an explosion of gas occurred. The cause of the explosion is unknown. The men had safety lamps and were using electric batteries to fire their shots.

Puritan—Surrounding a house, where it was suspected a black-hand organization which has terrorized residents of Fayette County for many months was located, four state troopers, with drawn revolvers, forced an entrance recently, arrested six men, all foreigners, and confiscated 150 sticks of dynamite, 100 caps and a dozen revolvers. The arrests followed a demand for \$1500 upon Frank Julian, a coal and coke operator. It is said that many other operators had received letters demanding large sums.

Scranton—With the completion of the rock tunnel that the Scranton Coal Co. has been driving from No. 1 Dunmore vein to the New County vein under the 300 block of Wyoming Ave., means will be provided for the reclamation of thousands of tons of virgin coal under the central and "hill" sections of the city.

Wilkes-Barre—First steps for the exemption from war service of every employee of the anthracite mines were taken on Aug. 21, by officials of the Lehigh and Wilkes-Barre Coal Co. Originally the company was assured that the miners would be spared from the draft because of their important part in supplying industry, but the draft boards have been certifying workers for service without regard for the nature of their occupation. Labor is so scarce now that it is admitted some mines will close down if as many as 25 men are taken from their forces.

Archbald—The Gravity slope colliery of the Delaware & Hudson Co., of which Edward Flynn is colliery superintendent, made a record run on Aug. 20, when 1030 mine cars were dumped at the breaker and 2506

tons of coal were shipped to market. This was accomplished in eight hours' time. The colliery averages 650 mine cars per day.

Hazleton—Work will be started shortly by the Lehigh Valley Railroad Co. toward moving its tracks away from the mine-cave zone between Park Place and Trenton, on the Mahanoy and Hazleton division. Pillar robbing has been going on in this vicinity in the collieries, causing frequent surface depressions.

Bituminous

Uniontown—The fixing of prices on Pennsylvania bituminous coal has caused a large number of small independent plants to suspend operations. This is particularly true of those small mines working the Freeport bed of coal in and about Brownsville. The small operators state that they cannot resume work until either the authorized price of coal is increased or the wage scale and the high cost of eatables brought within reach of the working man.

Johnstown—Many cases of violation of the mine laws will be heard before the September term of the grand jury. Within the past few weeks a number of miners have been prosecuted and have given bail for their appearance in court.

Beaver Falls—The purchase of 22,000 acres of coal lands in South Beaver Township by Pittsburgh capital has been made. The contract for the construction of a branch railroad, from the Pittsburgh, Lisbon & Western Ry., from New Galilee to the coal fields, has been awarded. It is the purpose of the new owners of the coal land to strip the upper bed of coal, which is from 3 to 4 ft. in thickness. Two steam shovels have been purchased. All of the land between Cannelton and the Ohio River is underlaid with coal. The prospects are that this whole section will be developed. It is estimated that vast quantities of coal may be produced by the stripping process. The Beaver Brick and Clay Co., of New Galilee, has also purchased several farms near Cannelton for the coal and clay underlying the property.

Lafayette—Engineers are at work laying out the site for the coal plant and mining town planned by the Jamison Coal and Coke Co., on the Thaw tract, lying between Manito and Pleasant Unity, which has been leased by the company for immediate development. More than 1600 acres of Pittsburgh coal are included in the tract, and the company intends putting down two shafts, both being some distance on this side of Pleasant Unity. It is said that it is planned to employ in the neighborhood of 2000 men, and it is the intention to ship the coal for byproduct purposes. No coke ovens will be built on the tract.

Indiana—Two new operations are well under way in the Brush Valley district, Indiana County. One is being opened by the H. H. Snyder Coal Co. and the other by St. Clair & Simpson. Both began shipments over the Pennsylvania R.R. recently.

Rices Landing—The Dilworth mine near here formerly owned and operated by the Dilworth Coal and Coke Co. but which was purchased by the H. C. Frick Coke Co. about one year ago has been placed in operation again. The Frick company has made great improvements to the plant among which is the building of a tippie with railroad connection. The mine was formerly a river mine.

Grove City—One of the largest stripping operations yet undertaken in the Pennsylvania fields is now being developed south of this place. The bed of coal has a thickness of 43 ft. and at some places the covering is 40 ft. thick.

Ligonier—It has been officially announced that the Pittsburgh, Westmoreland & Somerset R.R. will not be abandoned as was the rumor but will be improved greatly and branches made to tap new coal fields in this end of Somerset County. Two new locomotives have been purchased.

Kaylor—Fire recently destroyed a portion of the plant of the North Penn Coal Co., with a loss estimated at \$20,000.

Pittsburgh—The various bituminous mine inspectors are now distributing the mine foremen's certificates to the successful candidates at the examinations held in each district recently.

WEST VIRGINIA

Buckhannon—Many coal mines have been opened in Upshur County, in the last six months. Many openings are found in the side hills and even ground-hog holes are investigated to determine if the animal in digging his underground home has come in contact with the coal bed.

Clarksburg—The Francois Coal Co. completed a deal for the purchase of 208 acres

of Pittsburgh coal land and 179 acres located in the Red Stone bed in Elk Creek Valley, between Clarksburg and Philippi, from Edgar and Lydia Douglas, of Spokane, Wash. The price paid is said to have been approximately \$75,000.

Whitestock—The Piney Pocahontas Coal Co. will shortly open another mine at Whitestock, in the Pocahontas No. 3 vein. At this point this bed shows 60 in. of coal.

Beckley—The Buffalo-Thacker Coal Co. is preparing to operate another mine in the Freeport bed near Beckley. This was formerly the Buffalo Collieries Co.

Gassaway—The Pitt Block Mining Co., of Braxton, with a mine near Gassaway, shipping 100 tons daily, has been taken over by new interests. Joseph Goldberger is the newly elected president, Louis Parkas, vice president, and D. J. Lewis, secretary and treasurer. The capital stock will be increased from \$50,000 to \$100,000, and the production of the mine will be enlarged.

Huntington—Uncertainty as to the scope of regulation instituted by the Federal Government is holding up the development of a 2500-acre tract of coal land, owned by the Shelby Coal Co., in eastern Kentucky. Plans for development of the tract had been completed when the present move for coal directorship by the Government was begun.

Huntington—With a rise of water in the Ohio River recently, large shipments of coal were started down the stream. Five towboats with a total of 44 barges and 9 flats carrying 26,500 bu. of coal left for downriver points.

ALABAMA

Birmingham—The housing facilities at the Edgewater colliery of the Tennessee Coal, Iron & R.R. Co. are being greatly increased by the construction of a large number of dwellings for employees. Over 50 houses are nearing completion and construction will soon begin on a number of others. This is the model coal-mining camp of the company and the largest producer in the state.

KENTUCKY

McRoberts—The newly completed Y. M. C. A. and welfare building here was opened last week by a big entertainment held in the building and attended by many of the high officials of the Consolidation Coal Co., the Elk Horn Mining Corporation and other interests. An interesting program was carried out.

Jenkins—The Consolidation Coal Co. the work of which has been interrupted by an embargo on the Baltimore & Ohio for several days, is now mining and shipping more coal than at any other time in the history of the operations in eastern Kentucky.

Wheelright—It is said here that the Elk Horn Mining Corporation has acquired additional holdings of coal lands along Main Beaver and Jacks Creek, near Wheelright, all of which will be opened for development within the next few months.

OHIO

Bridgeport—Work was recently started in opening the R. M. Ryan coal mine at Burkle's Run. A force of men are at work cutting timber and the excavation for the opening is under way. It is expected that coal will be mined by the middle of October.

Columbus—According to evidence uncovered in an investigation of the suspension of certain Ohio mines, with an aggregate daily output of 4000 tons of coal, pro-German activities are responsible for the trouble. The Ohio Council of Defense is working on the matter.

With the fixing of coal prices by Federal authorities at a low point, the proposition of the State of Ohio for either purchasing or leasing a coal mine to supply 23 state institutions, will probably not be pushed for the present. Officials of the Ohio Board of Administration feel that the \$2 or \$1.75 price fixed by Washington is as low as it could hope to mine coal, even using convict labor and thus nothing has been done with the proposition for the present.

Athens—The order of President Wilson fixing the price of Hocking coal at \$2 a ton will put between 75 and 100 small wagon mines around Athens and Nelsonville out of business. These mines cannot be operated at a profit on less than \$2.25 a ton, it is said.

ILLINOIS

Lebanon—The People's Coal and Mining Co. has closed its mine here on account of the price fixed by President Wilson. The explanation is made that a soft stone formation in this mine, instead of rock, necessitates a greater expense in mining the coal.

Lincoln—Officials of the Latham Mining Co., employing 200 men, announce that the firm will close down on account of the prices fixed by President Wilson. They say that under the present cost of production they cannot operate at the President's prices. Officials of the Lincoln Mining Co. and the Citizens' Coal and Mining Co. say these two firms will operate at a loss at the President's figures.

Springfield—A movement has been started among Springfield operators to dispense with jobbers and sell directly to consumers. As the price at the mine, under the schedule fixed by President Wilson, will be \$2.20 a ton, and the price for hauling is 50c. a ton, the price delivered would be \$2.70 a ton unless it is found that the operators can take as added profit the 15c. jobbers' profit, which would make the price \$2.85 a ton, delivered.

When President Wilson fixed the prices of coal in Illinois, Governor Lowden had on his desk an unsigned call for a special session of the Illinois legislature to deal with the coal situation and the draft of an act authorizing the Governor to seize the coal mines of the state. The two documents have been laid aside. The Governor expressed his satisfaction with the President's action and announced that the finding of Chief Justice Carter, state coal dictator, would be withheld because it differed little from the figures fixed by the President. He wired congratulations to the Chief Executive.

Personals

P. A. Hart has resigned as agent of the Virginian Ry. at Norfolk, Va. He has been succeeded by S. D. Adsit.

J. C. Bryan has accepted a position in the equipment department of the Walter A. Zelnicker Supply Co., of St. Louis, Mo.

M. P. Gardner, of Cambridge, Ohio, has accepted a position as chief engineer with the newly organized Coal Ridge Co.

F. E. Herriman has taken charge of matters pertaining to coal properties of the New York Central Lines. He will also perform such other duties as may be assigned to him.

L. G. Hastings, of Fluck & Moore, engineers, of Somerset, Penn., has resigned to accept a similar position with Andrew B. Crichton, Farmers Bank Building, Johnstown, Penn.

W. J. Frances, connected with mining operations in the Birmingham district for a number of years, has removed to Raton, N. M., where he has accepted the presidency of the Superior Coal Co.

H. B. Fell, superintendent of the Wyoming Valley Water Supply Co., a subsidiary of the Lehigh Valley Coal Co., announced recently that he had resigned to enter an army officers' training camp at Fort Niagara.

J. D. Martin, of Clothier, W. Va. has severed his connection with the engineering firm of Ewing Martin, of that place, to accept the position as chief engineer of the United Coal Corporation and subsidiary companies.

W. A. Young, superintendent of coal terminals of the Virginian Ry., has resigned, effective about Sept. 1, to become associated with the Norfolk & Western Ry. at the Lamberts Point coal piers. Mr. Young's successor has not yet been announced.

George P. Moore, who for the past several years has been connected with the Leckie Coal Co. and the West Virginia Pocahontas Coal Sales Co., will succeed Charles E. Britt as manager for the West Virginia Coal Co., at Norfolk, Va.

Clarence T. Starr, superintendent of the Katherine colliery, was commissioned on Aug. 25, as a captain of engineers in the army. He served nine months in the regular army during the Spanish-American war and six years in the National Guard.

W. H. Dayton has been appointed St. Louis city salesman for the Walter A. Zelnicker Supply Co. Mr. Dayton was formerly associated with the Railroad Supply Co., Chicago, as secretary and purchasing agent. He was also Eastern representative of this firm for five years.

C. W. Parkhurst, for a number of years superintendent of the electrical department of the Cambria Steel Co., has resigned his position and will shortly become superintendent of the electrical department of Berwind-White Coal Mining Co. Mr. Parkhurst has been connected with the Cambria Steel Co. for the past 18 years.

Recent Coal & Coke Patents

Dumping Car. A. C. Murphy, New York. 1,232,958, July 10, 1917. Filed Oct. 4, 1915. Serial No. 53,913.

Coal Hod. J. Karssen, Holland, Mich. 1,234,671, July 24, 1917. Filed Mar. 9, 1917. Serial No. 153,641.

Mining Machine. E. C. Morgan, Chicago, Ill. 1,233,494, July 17, 1917. Filed May 1, 1913. Serial No. 764,755.

Coke Oven. E. J. Crossen, Joliet, Ill. 1,227,518, May 22, 1917. Filed Sept. 25, 1915. Serial No. 52,591.

Miner's Carbide Lamp. B. Lazare, Portage, Penn. 1,232,572, July 10, 1917. Filed Apr. 26, 1917. Serial No. 164,641.

Mining Apparatus. T. DeRoode, New York, N. Y. 1,229,418, June 12, 1917. Filed May 20, 1916. Serial No. 98,889.

Furnace Grate. J. & A. Niclaus, Paris, France. 1,231,930, July 3, 1917. Filed Apr. 5, 1915. Serial No. 19,210.

Chain for Mining Machines. H. A. Kuhn, Pittsburgh, Penn. 1,232,051, July 3, 1917. May 18, 1914. Serial No. 839,336.

Mining Machine. H. A. Kuhn, Pittsburgh, Penn. 1,232,696, July 10, 1917. Filed May 18, 1914. Serial No. 839,332.

Smoke Preventer. H. G. Korel, New York, N. Y. 1,227,057, May 22, 1917. Filed June 7, 1915. Serial No. 32,713.

Coal Scuttle. A. H. Brown, Grand Rapids, Mich. 1,227,527, May 22, 1917. Filed Dec. 13, 1913. Serial No. 66,641.

Coal Unloading Device. J. H. Tutwiler, Atlanta, Ga. 1,231,462, June 26, 1917. Filed Jan. 26, 1917. Serial No. 144,669.

Furnace Lining. D. B. Howard, Des Moines, Iowa. 1,233,782, July 17, 1917. Filed Nov. 11, 1915. Serial No. 66,965.

Mine Door. A. Blevins, A. L. Blevins and C. F. Kilgore, Coeburn, Va. 1,228,643, June 5, 1917. Filed Apr. 20, 1916. Serial No. 92,478.

Mining System and Means. J. S. Bartlett, Kalamazoo, Mich. 1,233,301, July 17, 1917. Filed Nov. 27, 1915. Serial No. 63,753.

Apparatus for Discharging Coke. S. N. Wellington, London, Eng. 1,229,691, June 12, 1917. Filed Oct. 30, 1916. Serial No. 128,471.

Smoke Handling Apparatus. A. Fernandez, Washington, D. C. 1,232,669, July 10, 1917. Filed Sept. 20, 1916. Serial No. 121,250.

Smoke Consumer and Fuel Economizer. S. H. Pudney, Toronto, Can. 1,230,766, June 19, 1917. Filed Oct. 9, 1912. Serial No. 724,793.

Furnace. N. Buck, assignor to Eureka Smokers' Furnace Co., Chicago, Ill. 1,233,444, July 17, 1917. Filed Apr. 3, 1916. Serial No. 88,516.

Apparatus for Raising and Conveying Coal. F. L. Stuart, Baltimore, Md. 1,230,236, June 19, 1917. Filed May 20, 1916. Serial No. 98,889.

Means for Supporting the Roofs of Mine Entries. J. J. Roby, Cleveland, Ohio. 1,229,323, June 12, 1917. Filed Dec. 9, 1912. Serial No. 735,867.

Method of Controlling the Stoking of Furnaces. E. A. Emery, St. Louis, Mo. 1,234,317, July 24, 1917. Filed Feb. 20, 1915. Serial No. 9559.

Automatic Coal Feed and Draft Regulator. W. C. Koelling, Freeport, Kan. 1,232,813, July 10, 1917. Filed Mar. 24, 1917. Serial No. 157,182.

Furnace Grate. C. J. Huber, assignor to Huber Grate Bar and Stoking Co., Baltimore, Md. 1,232,687, July 10, 1917. Filed Feb. 1, 1916. Serial No. 75,503.

Apparatus for Handling Coal. C. A. Pratt, assignor to Goodman Mfg. Co., Chicago, Ill. 1,232,082, July 3, 1917. Filed Apr. 4, 1914. Serial No. 829,435.

Mechanical Stoker. J. Batteer, assignor to O. Barnett Foundry Co., a corporation of New Jersey. 1,251,325, June 26, 1917. Filed Oct. 4, 1913. Serial No. 793,279.

Feeding and Burning Fine Fuel. W. D. Wood, assignor to Fuel Savings Co., Allentown, Penn. 1,232,640, July 10, 1917. Filed Oct. 21, 1915. Serial No. 57,029.

Shaking Mechanism for Furnace Grates. A. Courtot, assignor to American Radiator Co., Chicago, Ill. 1,232,006, July 3, 1917. Filed Apr. 15, 1914. Serial No. 831,950.

Underfeed Stoker for Boilers. E. K. Standish and G. E. Stevens, assignors to Stevens Mfg. Assn., Boston, Mass. 1,233,821, July 17, 1917. Filed Nov. 28, 1913. Serial No. 803,386.

Industrial News

Somerset, Penn.—J. B. Saylor, of this place, has purchased 325 acres of coal land from James Johnson, of Draketown. The tract is located in Lower Turkeyfoot Township.

Whitesburg, Ky.—The Rodgers Brothers Coal Co. is said to have acquired about 4000 acres of coal properties on Tug River, and is planning for extensive development work.

Seattle, Wash.—The Link-Belt Co. of Washington, is the new name of the Link-Belt & Dodge Products Co. The headquarters of this firm is 574-576 First Ave., South, Seattle, Wash.

Harlan, Ky.—The Mine Run Co., of which A. M. Gregory is manager, is starting the initial work on a coal development on the Seagraves Branch of the Louisville & Nashville R.R., several miles out from Harlan. It will begin shipping coal within 90 days.

Connellsville, Penn.—W. W. Parshall, James R. Clay and G. S. Harah have purchased several tracts of coal land in Luzerne Township for \$1500 per acre. The total consideration was \$750,000. The property is located along the river front between the Tower Hill and Isabella mines.

Uniontown, Penn.—Confirmation was recently had of a \$750,000 coal sale, involving the transfer of 495 acres or virgin coal in Luzerne Township. W. W. Parshall, James R. Clay and G. S. Harah purchased the Porter and Stewart tracts for a figure approximating \$1500 per acre. The intentions of the purchasers have not been announced.

Buffalo, N. Y.—The Upper Hillville mine, in Clarion County, Pennsylvania, which was a part of the property of Frank Williams & Co., of Buffalo, when it went into receivers' hands, has been sold to the Pennsy Central Coal Co., of East Brady, Penn., who has been the lessee for a year or so, the price paid being unofficially reported to be about \$90,000.

Uniontown, Penn.—I. W. Semans has sold through his receivers, Charles E. Lenhart and F. G. Kay, 3250 acres of Pittsburgh vein coal and 300 acres of surface in Amwell Township, Fayette County, to the Pittsburgh Coal Co. for a consideration of \$1,007,929. This is the third sale made by Mr. Semans in the last few weeks. The other two totaled a consideration of \$750,000.

Waynesburg, Penn.—The Pennsylvania, the Baltimore & Ohio and the Lake Erie Railroad companies will jointly build and own the new railroad in Greene County for the development of great coal acreages. It is stated that this agreement will result in rapid construction of lines of road contemplated. The new railroad will be constructed under the name of the Chartiers Southern Railroad Co.

Charleston, W. Va.—The Pennsylvania Lines west of Pittsburgh recently filed with the Public Service Commission of West Virginia an order agreeing to give coal operators doing team loading business their allotment of coal cars, provided they are loaded within 24 hr. after they have been received. This is the first railroad in West Virginia to agree to furnish coal cars instead of box cars to the team track operators.

Steubenville, Ohio.—The La Belle Iron Works Co. has recently closed a coal-land deal in Brown County, W. Va., securing about 3000 acres in the Buffalo district, extending from the Joseph Crouch farm, southward to Short Creek, and eastward to West Liberty. The price paid for the coal is said to have been \$100 per acre, making the largest financial transaction for coal in the county, and involving the sum of \$300,000.

St. Louis, Mo.—General Manager W. J. Walsh, of the Spring Creek Coal Co., and Secretary P. G. Matheny, of the West End Coal Co., Springfield, Ill., and other operators, had a conference here recently with officials of the Baltimore & Ohio Southwestern R.R. in an effort to obtain quicker movement of B. & O. coal cars. The railroad officials attributed the delays to the operators sending B. & O. cars over other roads and requested that this be avoided as much as possible.

Monessen, Penn.—The report from Lock No. 4 for the month of July shows a falling off in the shipment of coal of 1,662,000 bu. and of coke 121,000 bu. All other traffic

was somewhat smaller, the number of passengers carried downstream being 578, while in June it was 1241. Up-bound figures show 2111 for July as against 623 for June. The falling off in shipments of coal and coke was possibly due in great measure to the shortage of labor.

Fairmont, W. Va.—Completion of negotiations was recently announced by Alex. R. Watson, of the Initial Fuel Co., of this city, disposes of a tract of 500 acres of Pittsburgh coal in Harrison County to the Alpha Portland Cement Co., of Easton, Penn. The tract is situated at Reynolds-ville, a coal-mining town a few miles west of Clarksburg. The purchase price has not been made public. The purchasing company will develop the tract at once for the purpose of obtaining fuel for the operation of its own plant.

Columbus, Ohio.—Cars which were not filled to capacity have been photographed by the Baltimore & Ohio railroad and these photographs are being sent to shippers in an effort to increase the efficiency of the road. J. M. Davis, vice president, began the appeal to increase car loads by sending photographs which showed how efforts of the railroad had been disregarded in several instances. He believes that the method will help greatly toward solving the difficulty.

Toledo, Ohio.—Activities at the Toledo docks during the past week have been large. This is following out the instructions received from Federal authorities to get as large a tonnage to the head of the Lakes before the close of navigation as possible. The Hocking Valley docks loaded 147,000 tons during the week ending Aug. 24, as compared with 148,000 tons the previous week. The total tonnage handled by these docks since the opening of navigation is 2,428,176. The Toledo and Ohio Central docks loaded 102,000 tons, the same as the previous week.

St. Louis, Mo.—At a recent meeting of the local committee of the Commission on Car Service of the National Council of Defense, reports were submitted which showed that 24,000 carloads, or 1,200,000 tons, more of coal have been handled by the railroads serving the Illinois field during the seven months ending July 31 than in the corresponding period of the preceding year. T. T. Brewster, chairman of the Fifth and Ninth Districts Operators' Association, explained that the increased tonnage went to the northeast and northwest, which had previously been supplied by the Eastern mines. He explained its diversion from St. Louis, further, by the statement that St. Louis would not buy at prices that have prevailed.

St. Louis, Mo.—The Central Illinois Public Service Co. has purchased at an understood price of \$1,000,000 the Southern Illinois Railway and Power Co., which owns and operates a traction line serving the Saline coal mining belt, connecting the Illinois towns of Eldorado, Harrisburg, Dorrisville, Ledford and Carrier Mills. The deal is expected to result in an extension of the line to Marion, there joining the coal-belt traction line and the Murphysboro-Carbondale traction lines with the view of entering St. Louis by joining up with traction enterprises projected southward from St. Louis. The Central Service company is a subsidiary of the Middle West Utilities Co. of Chicago, of which Samuel Insull, member of the National Defense Council, is president. The company controls and operates municipal utilities and traction lines in 150 Illinois cities.

East Pittsburgh, Penn.—Increasing development in the western Pennsylvania fields continues to call for more electrically-driven hoisting equipment. Orders recently taken by the Westinghouse Electric and Manufacturing Co. call for a total of 2250 hp. in motors for use with Vulcan hoists. The Rachel Gas Coal Co., of Downs, W. Va., has ordered a 700-hp. alternating-current motor for its main hoist and a 300-hp. motor for its supply hoist. This shaft has a depth of 400 ft. and a capacity of 3000 tons daily. The Lincoln Gas Coal Co. of Washington County, Pennsylvania, has ordered 300-hp. motors for both its main and supply hoists, working a 512-ft. shaft. This equipment will handle an output of 1500 tons per day, which will be reached in about two years. At the end of that time a 1000-hp. motor will be placed on the hoist, and the 300-hp. machine shifted to a fan. A similar procedure will be followed at the Mather Coal and Coke Co.'s new shaft in the Tennille Creek field in Greene County, Pennsylvania, where a 300-hp. motor will be installed to take care of a 360-ft. shaft, to be replaced later by a 1000-hp. machine.

Market Department

GENERAL REVIEW

The production, distribution and sale of anthracite little affected by Government price fixing. Bituminous moving on contract as usual. Spot bituminous almost entirely withdrawn from the market.

Anthracite—The fixing of prices on anthracite has had but little effect upon the market. It seems to be the consensus of opinion among all concerned that the Government has been decidedly fair in the matter of prices accorded to the anthracite industry. These prices coincide closely with those of the larger companies and they have consequently not affected the general market to any appreciable degree. Anthracite mines are working with fair steadiness, and the output is perhaps larger per day and per man than any time before in the history of the industry. Considerable quantities of this fuel are moving northward to the Lakes for transshipment west and northwest, while the supply to the Atlantic seaboard would appear to be about the same as in previous weeks.

Bituminous—The condition of the bituminous market is chaotic. The fixing of prices by Presidential order at a level approximately one-third lower than that agreed upon by the operators has had the effect of practically withdrawing all spot coal from the American market. Prior to the announcement of price fixation many contracts were entered into at prices considerably higher than those named, the idea of the consumers in entering into these contracts being that it would be better and more to their interest to pay a higher price for their fuel and receive preference in delivery than to enjoy a lower price but not get their coal. The result has been that as soon as prices were fixed what coal has been produced has been applied to existing contracts and none or only small quantities placed upon the market. The prices as fixed, it is claimed, are so low that many mines, even some of fairly large size, will be driven from the coal business unless some readjustment is made. Delegations from various parts of the country have proceeded to Washington in an endeavor to get the prices on bituminous coal increased and save themselves from financial ruin.

Lake Trade—The shipments of coal to the Great Lakes are in perhaps greater volume than previously. Lake coal has been given priority and fuel is being rushed to the Northwest in considerable quantities. The dumpings from various Lake Erie piers at Ohio ports compare favorably with those of previous weeks. Congestion and car shortage are spoken of, however, and in some instances vessel owners have refused to hold their ships in port while the railroads could assemble coal with which they were to be loaded.

Middle West—Buying throughout the Middle West during the past week has been light. The new price schedules are expected to reduce production, this effect having been already felt in certain localities. The car supply shows somewhat of an improvement over the past week. Announcement of the new price schedule promulgated by the Government has thoroughly disturbed the trade, causing considerable confusion and leaving retailers generally in doubt. Many of these dealers have accumulated stocks at prices decidedly higher than those advocated by the Government. Such dealers are uncertain as to whether they will be expected to sell these stocks at the prices named by Washington. The market is, however, slowly readjusting itself to the new conditions. Demand for high-grade fuel is exceptionally good, while ordinary grades are a trifle slow. The strike in Illinois still continues, shutting off a considerable tonnage from that state. Practically no Eastern coals are finding their way into the Middle West, and domestic demand is at a standstill. Few quotations indeed are to be had at the present time on spot coal.

A Year Ago—Railroad strikes possibly the dominating feature. Advance to the full winter anthracite circular and buying still active. Bituminous shippers running behind on contracts. Lake movements unsatisfactory. Consumption in Middle West at maximum rate.

COAL PRODUCTION

The ratio of tonnage produced to full-time output continued to decline during the week ended Aug. 11. Mines representing more than one-third of the output of the country produced 71.8 per cent. of their combined full-time capacity as limited by the present labor force. The index not only fell below the level of the preceding week (73.0), but reached the lowest point attained since June 1. Iowa, Illinois, Ohio, Kansas and Missouri declined; Alabama, southwestern Virginia and western Pennsylvania held their own; while eastern Kentucky and Tennessee recovered to some extent from the depression of the week before.

PER CENT. OF FULL-TIME OUTPUT PRODUCED IN WEEK ENDED

State	July 14	July 21	July 28	Aug. 4	Aug. 11
Iowa	89.9	85.6	87.3	87.5	82.6
Illinois	79.5	77.1	76.0	72.6	70.3
Indiana	73.0	69.3	67.8	69.5	63.2
Ohio	69.3	69.2	69.4	73.7	70.2
Western Penn.	78.6	77.9	76.3	78.1	78.2
Southwestern Va.	89.6*	96.1*	95.8*	94.9*	94.0
Eastern Kentucky and Tennessee	78.4	81.0	82.6	68.6	74.2
Alabama				91.4	88.4
Kansas and Missouri	78.0	78.2	69.5	69.4	64.9
Oklahoma and Arkansas	75.7	69.2	79.0	63.4	66.0
Total reported...	78.1*	76.3*	75.3*	73.0*	71.8

* Revised figures.

The record of cars of coal loaded on roads representing more than half the shipments of bituminous coal shows a drop of 4 per cent. in the week ended Aug. 18, compared with the week ended Aug. 11, but an increase over the low record of Aug. 4. The general downward tendency in the rate of production that has been manifested since the middle of July was resumed last week, after a slight gain in the week ended Aug. 11, in all districts shown except Illinois and Indiana. The slump in Pennsylvania and Ohio is particularly to be noted. A strike in the Southern Appalachians decreased shipments from eastern Kentucky and eastern Tennessee nearly 20 per cent.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

	Week Ended		
	Aug. 4	Aug. 11	Aug. 18
Alabama, E. Ky., and E.			
Tenn.	7,579	8,275	6,743
Ill., Ind., and West. Ky.	14,452	16,452	17,871
Pa. and Ohio	41,397	42,420	39,567
W. Va. and Va.			
Smokeless	10,212	10,762	10,662
High volatile	16,648	17,702	16,822
West of the Mississippi	1,794	1,858	1,700
Total	92,082	97,469a	93,370

a Revised from 1st report.

BUSINESS OPINIONS

The Iron Age—Even with the Government announcement of steel prices known to be close at hand, the market has done some further readjusting on its own account. Pittsburgh has been the chief scene of activity and the business done has been almost uniformly at the expense of prices.

The trade is much at sea as to the extent to which the readjustment will go, and is not helped by conflicting advices from Washington as to prices to be allowed governments and the public. In the absence of power to enforce a uniform price for the three classes of buying, the Administration is represented as turning to the Senate bill for such control of iron and steel as has been provided for food and fuel. Meanwhile sentiment grows in favor of substantially uniform prices to the Government, Allies and the public provided there is the anthracite type of adjustment rather than that in bituminous coal.

If the Government adopts the proposal to pay higher prices for finished steel to high-cost mills, pig iron may escape regulation except that due to the expected reduction in coke. No action on coke has been taken, though there are tentative estimates of a \$4 price at ovens.

Dunn—Actual and prospective regulation of commodity prices has remained the dominating factor in many industries and in securities markets, and in certain raw materials and manufactured products decisive readjustment has resulted from other than official action. In contrast to the former rapid and practically general upturn, more recessions than advances now appear in wholesale quotations, and the possibilities of further downward revisions enter largely into calculations.

Bradstreet—Ordinary trade buying is cautious pending price settlements. War orders have right of way. Government purchases enormous. Shifting of demand from ordinary trade channels indicated as military population increases. Fall trade enlarging in crop-producing districts. Late crops improved. Corn and cotton benefited by rains. Estimates of winter and spring wheat yields being increased. Industry active. Scarcity of raw materials increasing. No burdensome stocks apparent anywhere. Coal prices fixed. Steel prices sag. Ordinary building at low ebb. Pacific Coast lumber trade exception to general activity.

Dry Goods Economist—Sellers in many lines are deeply impressed with the narrowness of the limitations placed on buyers by merchants and merchandizing managers at this time. Apparently, the retail stores which in their buying appropriations are taking into full consideration the great increase in prices are the exceptions. Certain garment manufacturers, for example, pointed out this week that for the amount of money the retailer is paying today he obtains just half the number of garments he got for the same amount a year ago.

Marshall Field & Co.—Wholesale distribution of dry goods for the current week has been in excess of the heavy volume in the corresponding period of 1916. Road sales for immediate as well as future shipment have surpassed those of a year ago by a good margin. Customers have been in the market in about equal numbers. Collections are considerably ahead of a year ago. Prices are firm.

American Wool and Cotton Reporter—Comparative quiet has prevailed in the Boston wool market for the week under review. The chief interest has been in connection with Government purchases or prospective purchases of wool. The position of wool in its relation to the national necessity is still difficult to define. Growers of and dealers in wool throughout the country have come to have more confidence in value and the soundness of the present market basis. There is a distinctly easy cotton market with improved conditions in regard to the crop. Except in southern Texas the crop is making good progress and the prospect now is for one of good size.

Atlantic Seaboard

BOSTON

Government action suspends sales until the situation clears. Practically no spot coal available at any originating point. Hampton Roads coals in sufficient supply for contracts and Government use, but shippers apprehensive of increasing naval requisitions. Pennsylvania grades in strong demand at prices current on Aug. 21. Anthracite local situation still serious.

Bituminous—The President's price-fixing order has resulted in chaos, at least temporarily. It is apparently impossible to buy coal at \$2 per net ton, and in view of the broad powers conferred by the Food Act, certainly the prudent operators and selling agents will not place themselves in the position of defying the Government. Meanwhile, of course, existing contracts are in full operation and coal will continue to come forward for those who arranged for spot deliveries prior to the day the President's order became effective.

In the Pocahontas and New River fields the new schedule will probably allow a fair margin, but why New River operators should be granted a 15c differential over and above any other bituminous mines east of the Mississippi is something not yet ex-

plained. A mine owner whose coal bed is 9 ft. thick is placed on a parity with one who is cutting expensively into a 3-ft. seam. At a time when fuel is greatly needed one would suppose the authorities would try to avoid if possible any curtailment of output, but this is practically all the regulation has so far accomplished.

When the new price was announced a large number of operators at once asked a very pertinent question. In cases where the mining cost was in excess of \$2 per net ton did the Government desire that the mines be closed down or was it the intention to adjust wages to meet the demand? This was and is a well-balanced inquiry, but so far a conclusive answer is wanting. Of course, the phrasing of the President's order leaves it open to modification later, presumably in case one section or another can make out a case. There is little doubt that a good many exceptions will be urged. It isn't to be supposed that any reduction in wages will be the result of Federal action, but either prices must go up or mine-workers must accept less pay. There is no other alternative.

At this writing absolutely no sales are being reported on the new list and notwithstanding most urgent inquiries from buyers eager to pay the price ruling a fortnight ago, or any reasonable advance over that basis, the coal factors are powerless. It is hard to see, moreover, how conditions can be corrected without further executive action. The Federal Trade Commission will probably soon have an opportunity to diagnose a situation much more serious than the one it has been sought to remedy.

The statement of Doctor Garfield, the coal administrator, was not very reassuring as to the immediate future. Must each individual mine show a clean bill of health before it will be permitted to ship coal at prices which manufacturers are more than willing to pay, in order in these strenuous times to make good on their obligations to deliver their manufactured product?

At retail, in Boston, the price of bituminous has not yet been changed. Will the Government take action on coastwise freights? There are people making money outside the coal trade!

For the reasons outlined above, we are not in position this week to report any quotations on bituminous. The market is today at a standstill.

Anthracite—The list of prices included in the President's order coincides in broken, egg, stove and chestnut, with the circular of certain of the larger companies for shipments beginning Sept. 1. There is therefore no disturbance in anthracite because of the Government action. The shippers are given the privilege of charging 5c. more to cover the expense of screening at Tidewater piers, but otherwise no charge is recommended to the companies.

A distinction is made, however, between "railroad-owned" mines and those operated by individuals. The latter are allowed to charge 75c. more than the companies, on account, it is said, of the disadvantage individual mines suffer through not being able to control transportation. The Government seems to have dealt considerably with the anthracite operators, and on all sides there is a feeling of satisfaction over the outcome of the price discussion at wholesale.

NEW YORK

New anthracite prices pleasing to the operators. Domestic coals scarce, but producers are in better shape and distributing more coal to their customers. Small sizes plentiful. Bituminous operators complain of low prices fixed by the President and some may be forced to suspend operations. No free coals and bunkering is slow.

Anthracite—The prices for the domestic sizes as fixed by the President practically represent what the big companies have been getting recently. There are only two changes. Broken coal shows an advance of 10c. per ton above that charged by some of the companies, while the new price of \$4 for pea coal is an increase of 90c. over that charged by the Philadelphia & Reading Coal and Iron Co., and a substantial increase over the prices previously asked by most of the other companies. There is comparatively little broken coal received here unless it is on contract, and whether or not the operators will take advantage of the new price fixed for pea coal and advance their Tidewater prices accordingly has not yet been announced. Representatives of the companies expressed themselves as pleased at the apparent satisfaction of the President with the way the coal business was being conducted.

The fixing of prices caused little flurry here. A great many tradesmen looked for a reduction. There was some comment because prices for the steam sizes were not included in the announcement.

Pea coal is tight and quotations have ranged from \$5.75 to \$6.35 f.o.b., with 30c. added for alongside deliveries.

The steam sizes are plentiful. Buckwheat No. 1 is easy but shippers look for a stiff market in a couple of weeks. There is practically no call for rice or barley.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken.....	\$5.95	\$6.70
Egg.....	5.85	6.60
Stove.....	6.10	6.85
Chestnut.....	6.20	6.95
Pea.....	4.60@4.80	5.75@6.35
Buck.....	4.00@4.15	4.75@5.00
Rice.....	3.40@3.60	3.00@3.50
Barley.....	2.90@3.10	2.25@2.50

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The market which had been practically dead for several weeks became stagnant with the announcement of the new prices by the President. Operators were sorely disappointed and surprised at the rate of \$2 net ton at the mines for Pennsylvania coals and there are many who say that unless there is a change some operators will be compelled to suspend operations.

There are several points to be cleared up, the most important of which is the matter of contracts. Newspaper reports have been that operators will be told to adjust their contracts with the new prices, while the operators contend that the Food and Fuel Bill provides that contracts shall not be abrogated. No official announcement, except that contained in the daily press has been received by the operators.

There has been some hesitancy on the part of operators who had coal on the road at the time of fixing the prices as to whether they should quote the new price or the old price to buyers. Some held that inasmuch as the coal had been shipped prior to the fixing of the new prices, the old price obtained while others contended the opposite. However, no sales were heard of at the old prices and shippers, as a rule had no coal to offer for sale and were not making any quotations. It was said that some sales had been made, the price to be fixed when the matter of priority of rate had been decided.

It has been many months since spot coal has been so scarce here. Wholesale dealers have none to offer and are not quoting prices. Demand is heavy and it was said that some Government vessels were being detained in the harbor because of the lack of fuel, although officials had been endeavoring to secure enough coal to enable them to leave port. Unless conditions improve at once, it was predicted that many factories and industrial plants will be forced to suspend operations, so short has become supplies.

Bunker demand is heavy, but owing to the scarcity of free coals there is much delay in loading.

PHILADELPHIA

Anthracite trade satisfied with Government price order, Pea price only cause for surprise. Some grades lowered in price. Retailers have price problem. Heavy demand for sizes continues. Steam coals easy. Bituminous price order dazes trade. Operators face loss. Appeal made for change. Brokerage business hit. Fair shipments, but mostly on contracts.

Anthracite—Probably the only surprise occasioned by the President's price regulating order, at least to those immediately concerned in the trade, was that portion of it relating to the pea coal price, which was fixed at \$4, or 90c. higher than the lowest circular price for September, that of the Philadelphia & Reading Coal and Iron Co. There is no question that this is justified by the circumstances. As to the other prices it was felt that since the trade had been working below the prices as set by the Trade Commission that these would be the ruling figures in any order issued by the Government. It must be noted, however, that while the white ash pea coal was increased 90c., the increase on red ash and Lykens Valley coal of the same size was but 70c. over the old figures, while the prepared sizes of these two classifications were reduced in price. On Lykens Valley egg this reduction amounted to 50c., while on the stove and nut the reductions on both classifications were 10c. each.

It is unusual for the Western market to buy pea coal in the quantities it is now calling for. Shippers say the demand is heavy and that \$4.65 is freely offered to individual operators for it.

There is not a great deal of strength to the steam sizes. Buckwheat is fair and is being sold by some at \$3.40 to \$3.50. It is becoming noticeable that the demand for this size for domestic use is increasing. We are informed that in Philadelphia and vicinity there are now in use about 2000 boilers constructed to burn buckwheat for heating purposes. It is claimed that their consumption this winter will be about 45,000 to 50,000 tons, which is about a 50 per cent increase over last year.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line	Tide		Line	Tide
Broken.....	\$5.10	\$6.25	Buck.....	\$2.90	3.30
Egg.....	4.35	5.65	Rice.....	2.40	3.40
Stove.....	4.60	5.90	Boiler.....	2.20	3.30
Nut.....	4.70	5.95	Barley.....	1.90	2.15
Pea.....	3.30	4.20			

Bituminous—The operators are still in a daze due to the drastic price regulating order of the President. They had, of course, believed for some time that action was pending in reference to prices, for ever since the agreement they made with Secretary Lane to sell coal at \$3 and \$3.50 there has been a continuous agitation for lower figures. However, no one expected a cut that practically means elimination for many small operators and heavy losses for many other interests. There can be no doubt that with prices of \$2.25 for screened coal, \$2 for mine run and \$1.75 for slack that much coal will be brought to the mouth of the mine at a loss. As to the small and poorly equipped openings which always spring up in time of heavy demand, they will have to be closed entirely, which will diminish the already inadequate supply by a considerable tonnage in the aggregate.

In their desire to assist the Government at this time most operators are loath to publicly discuss the situation, and in order that they may form some definite basis for action a meeting has been called for Pittsburgh at which some plan is to be outlined in order to place their case before the President in the proper light.

The operators continue to point out that with a good car supply and fair rail movement the prices would to a great extent adjust themselves and they will take great pains to impress upon the President this feature of the situation and urge him to take such action as will insure sufficient cars at all times.

Another radical change likely to be effected if the new order stands is the complete elimination of purely brokerage houses and the trading between houses. With the small commission allowed this feature of the trade will soon be but a matter of history, as the margin is too small on which to conduct business these days.

BALTIMORE

Bituminous coal trade halted while the air is filled with hot discussion over Government price fixing. Many small mines will be forced to close. Little coal at Tidewater. Anthracite receipts light.

Bituminous—Never in the history of the soft-coal industry has such a halt come to the trade as at present. A week after the Government fixed the price of coal around \$2 there is no fuel of that price on the market here. In addition, there is the fear of the coal men to sell or buy at higher prices than prescribed under penalties that could run as high as two years' imprisonment and \$5000 fine for each transaction, and the result is that all spot trading has ceased.

Some coal is moving on contracts, but this movement is not even up to standard. The Tidewater Coal Exchange is reported receiving less fuel than at any time in its brief history, and the present week started with Tidewater piers almost swept clear of fuel. While coal men here say that the trade is ready to go the limit of practical cooperation with the Government under regulation, many of the best posted fuel men here say that they fear that the plan as at present outlined is in for some bumps before it is straightened out.

Meanwhile consumers here are growing desperately short of fuel in many cases. Every coal man is being besieged with requests for fuel at any price, but there are general refusals. It seems sure that no coal is being sold on the \$2 basis; if any is going at higher rates, no one is admitting the fact. Unless quick relief comes there is sure to be a mighty serious situation develop for those industries that have relied in whole or in part on open market purchasing. Even the firms that are apparently covered with contracts may have

their troubles, as deliveries are far back. The whole situation is far from satisfactory—some regard it in a much more serious light.

Anthracite—Hard coal firms here are doling out their supplies in an effort to make all ends meet. Few consumers are now getting all the coal they ask for. So far there is no actual need, but stocks are far below the seasonal average and receipts are so light as to cause much uneasiness. The Government prices make little change in existing conditions. The probabilities are that the present schedule will be maintained until the first of September and then a 10c. a ton advance will be made.

HAMPTON ROADS

Movement rather light this week. Practically all prices withdrawn. Stocks somewhat better. Piers still badly congested.

Shipments have been slightly less this week than last. The bulk of the tonnage has moved on contract business, with an occasional cargo for export at the market. The majority of shippers have withdrawn all prices for domestic business and are not quoting until the matter of price has been definitely settled by the Government.

It is understood that the recent announcement in regard to the price of \$2 for Pocahontas and \$2.15 for New River, net ton f.o.b. mines, does not apply to foreign business nor to bunker coal to foreign steamers. Prices for this business are around \$6.50 per gross ton.

At Newport News and Sewalls Point the piers are still blocked and dispatch to vessels is far from satisfactory. These two terminals are the strongholds of the Tidewater Coal Exchange, especially Newport News. There is some excuse for detention at Sewalls Point where there is only one pier. At Newport News, however, the facilities are substantially the same as at Lamberts Point, where the majority of the shippers are not in the pool. At this latter terminal the tonnage dumped is far in excess of that at Newport News and dispatch is much better.

Anthracite is still scarce and dealers report that they are unable to secure more than a small percentage of the coal bought. The greater part of this grade arriving here is by vessel and dealers who are without wharf facilities are placed at a great disadvantage. Prices still continue around \$9 per net ton, delivered, cash.

Ocean Shipping

OCEAN FREIGHTS

There are very few coal orders in the market. Few steamers are available for such orders, and the market is at about the same level as a week ago. Whether or not the recent Washington ruling as to the price of coal will have any effect on the export coal freight market is as yet undetermined. None of the recent fixtures for export coal have been reported.

We would quote freight rates on coal by steamer as follows:

Europe	Aug. 20	Aug. 27
Marseilles.....	\$100.00 about	\$100.00 about
Spain (Atlantic)*	42.00 about	42.50 about
Spain (Med't'n)*	44.40 about	45.00 about
Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."		
South America		
Montevideo.....	\$30.00@32.40	\$30.40
Buenos Aires.....	30.00@32.40	30.40
Rosario.....	33.60@36.00	34.00
Rio Janeiro.....	31.00 about	35.00 about
Santos.....	35.00 about	31.00 about
Chile (good port)	16.00 about	16.00 about
West Indies		
Havana.....	5.25@ 5.50	5.25 about
Cardenas, Sagua	6.75 about	6.75 about
Cienfuegos.....	7.75@ 8.00	7.75@ 8.00
Port au Spain.....	10.00@ 10.50	10.00@ 10.50
St. Lucia.....	10.00@ 10.50	10.00@ 10.50
St. Thomas.....	9.00@ 9.50	9.00@ 9.50
Barbados.....	10.00@ 10.50	10.00@ 10.50
Kingston.....	7.50 about	7.75 about
Curacao.....	9.00@ 9.25	9.00 to 9.25
Santiago.....	7.50@ 7.75	7.50@ 7.75
Guantanamo.....	7.50@ 7.75	7.50@ 7.75
Bermuda.....	7.00 about	7.00 about
Mexico		
Vera Cruz.....	9.50@ 10.00	9.50@ 10.00
Tampico.....	9.50@ 10.00	9.50@ 10.00

* Spanish dues for account of cargo. * And p.e.
 Or other good Spanish port. * Net.
 W. W. Battie & Co.'s Coal Trade Freight Report.

Lake Markets

PITTSBURGH

Coal price fixing stops transactions. Hope of prices being increased. Priority for Lake coal reduces supplies to manufacturers.

There has been practically no coal sold in the open market since the President promulgated his order fixing the price of Pittsburgh district coal at \$1.75 for slack, \$2 for mine-run and \$2.25 for screened coal, per net ton at mine. Many operators insist that the schedule is too low and that it is below cost for many small mines, not counting the wagon mines, many of which went out of business after the Peabody agreement on the \$3 basis.

There is complaint this week that the operation of Priority Order No. 1 of the new Priority Board, in favor of Lake coal shipments, will reduce the supplies of fuel to manufacturers in the Pittsburgh and valley districts, perhaps causing some works to curtail operations.

We quote the market extremely quiet at the prescribed prices, \$1.75 for slack, \$2 for mine-run and \$2.25 for screened coal, per net ton at mine, Pittsburgh district.

BUFFALO

Bituminous disturbance goes on. Nobody knows which way to turn. Little free coal on the market. Canadian movement better. Anthracite going fast by Lake. Less clamor here.

Bituminous—The uncertainty continues. Only one result of the price fixing is apparent. The operators are falling back on their contracts and announcing that they have no coal to sell. The consumer with a contract that will meet his needs, no matter if the price is somewhat high, is called lucky and the jobber who has such agreements is recalling with satisfaction the days when he was called a fool for making them.

It is feared that if the present state of things lasts, the output of coal will be reduced, which is the worst thing that could well happen. When the \$2 price was announced, there was sign of rebellion reported on the part of some operators, but that appears to have passed. The statement that coal could be put on cars for \$1.35 probably stopped that.

The bituminous market is in such condition that all figures will be practically nominal. Jobbers can get next to no coal. They would be willing to pay more, but are doubtful of the legality of such a transaction. Based on the prices of \$1.75 net at the mines for slack and \$2 for lump, with the jobber's profit of 15c. and the various rates of freight from mines that ship here, it works out in this way:

	Slack	Lump
Pittsburgh.....	\$3.30	\$3.80
Bessmer.....	3.20	3.70
Allegheny Valley.....	3.15	3.65

No other coal comes here regularly, on account of higher rail rates, but there are specialized grades, like smithing, smokeless and cannon, which have been bringing a dollar or two extra, but it would be hard to say what prices they would take now, as new orders are not at present filled. Practically all coal moves on contract, which is above these prices.

Anthracite—The sudden giving out of Lake tonnage for a day or two lately, owing to slow unloading of ore cargoes, threw an unusual amount of coal into the local trade and for the first time lately furnished more coal than could be distributed in one day, so that the demand in the city is satisfied at present. The anthracite interests appear to be pleased with the prices fixed by the Government, saying that they vindicate their judgment in the matter. The changes are so slight that it will hardly be necessary to revise the lists.

Shipments by Lake look small, especially as the Canadian cargoes are no longer included, being to American ports only, 76,800 tons, of which 13,500 tons cleared for Chicago, 8,300 tons for Milwaukee, 8,000 tons for Sheboygan, 1,900 tons for Manitowoc, 850 tons for Racine, 2,550 tons for Marquette, 850 tons for Marinette and 40,900 tons for Duluth and Superior.

Freight rates are 45c. to Duluth, 50c. to Milwaukee, 55c. to Marquette, 60c. to Chicago, 65c. to Manitowoc, 75c. to Sheboygan and \$1.25 to Racine.

TOLEDO

Many steam users cancelling orders, owing to the new prices as fixed by the Government. Small towns in this section suffering from shortage of coal supplies in all grades.

Buyers are holding off before placing orders for supplies for the winter, ostensibly waiting to see what effect the new quotations will have on deliveries. In the meantime they are not placing orders, and are using the coal they have in stock. The inevitable result, according to wholesalers, will be a general shortage of coal in this section within a month. At this time only the small towns in the immediate vicinity of Toledo have been complaining of a shortage.

Domestic trade is good. Retailers who have stocks of anthracite are not having any trouble in getting last year's price, and in most cases a slight advance thereon. The small dealers who have been trying to get a supply of coal for the winter for the past month, are in worse plight now than ever.

Government supplies are being given preference over everything else in transportation; the movement of troops will soon begin. Retailers in the villages near here are for the most part completely sold out of anthracite. The supply of coke is also small and insufficient to take care of the demands which will be made upon it in the villages.

A few vessels left this port this week for the Northwest without cargoes. Vessel owners refused to hold the ships while the railroads moved the coal to the docks. Every effort is being made to ship all the coal possible to the Northwest before the close of navigation.

Prices on net tons, f.o.b. mines, are as follows:

	Mine-Run	Lump and Egg	Nut and Slack
Hocking and Pomeroy.....	\$2.00@2.35	\$2.25@2.60	\$1.75@2.10
Kentucky.....	1.95	2.20	1.70
Pocahontas.....	2.00	2.25	1.75
West Virginia splint.....	2.15	2.40	1.60

DETROIT

Consumers of steam and domestic coal continue a waiting policy. Receipts of anthracite are light. Lake shipments increase in volume.

Bituminous—With the initiatory steps toward regulation of the bituminous coal trade taken by the Government through the fixing of prices for the product of the various mining districts, Detroit consumers of steam and domestic coal have so far evinced no increase in interest. Detroit jobbers in general have no criticism to make of the prices fixed by the President. The opinion is held by many of them, however, that the action of the President will result in a noticeable diminishing of the supply of coal available for local distribution. This theory is based on the belief that the lower prices will have the effect of stimulating demand at other points, tending to reduce shipments to Detroit and Michigan. It is asserted that large consumers, such as the Detroit Edison Co., the Detroit City Gas Co. and the Detroit United Railways, are likely to be benefited by the President's price-fixing arrangement to a greater degree than some of the smaller users of steam coal, such as apartment houses and factories, which have found it necessary to assure their supply of fuel by putting in stocks before the new prices became effective.

Anthracite—Incoming shipments of anthracite are light in volume and the buying is not of an urgent nature. Household consumers seem to be delaying placing orders and retail yards seem inclined to await future possibilities.

Lake Trade—Under instructions from the Government's new director of transportation, the coal-carrying roads are making an effort to increase the supply of cars available for moving coal to loading ports and a perceptible gain in volume of Lake shipments is apparent, though chief activity is still centered in Toledo and Sandusky.

COLUMBUS

The coal trade in central Ohio is unsettled because of the new price schedules announced from Washington. Operators and shippers are waiting to see the effects of official announcement and to investigate the matter.

The price announcement from Washington was like a bolt out of a clear sky, with the possible exception that the sky was not as clear as it might have been. In other words, producers and shippers believed there would be a reduction, but were not prepared for the radical change in levels made by the announcement. Most of the week following the announcement was taken up with discussions of the matter and what steps would be taken. In the meantime little activity outside of steam and Lake trade was reported.

The Lake trade is active to the extreme and orders from Washington to ship all available tonnage to the Northwest are being carried out. Loadings at the docks have been heavy. Vessel movement is fairly good and there is nothing to hinder a good tonnage going to the Upper Lake ports.

Production is rather good, although several mines in the Hocking Valley were closed down during the past week, due to minor labor troubles. The railroads are also congested and free movement is restricted. Consequently the output in many Ohio fields has been considerably restricted.

Prices on short tons f.o.b. mines are as follows:

	Hock- ing	Pom- eroy	Eastern Ohio
Rescreened lump.....	\$2 25	\$2 25	
Inch and a quarter.....	2 25	2 25	\$2 25
Three-quarter inch.....	2 25	2 25	2 25
Nut.....	2 25	2 25	2 25
Egg.....	2 25	2 25	
Mine run.....	2 00	2 00	2 00
Nut, pea and slack.....	1 75	1 75	1 75
Coarse slack.....	1 75	1 75	1 75

CINCINNATI

Business has practically ceased pending discussion of how to handle new Federal prices, although some new retail figures have stimulated that department.

The effect of the maximum coal prices announced by the Government last week had much the same effect in Cincinnati as elsewhere—putting the trade into a state of considerable uncertainty as to how the practical details of the matter are to be worked out. The principal source of uneasiness is the considerable number of retailers who purchased coal at the higher market levels heretofore prevailing, it being pointed out that if retail prices are now fixed with reference to the new maximum figures, these retailers will suffer severely.

So far there has been comparatively little stimulus to business, as only a few retail concerns have announced new prices, and these prices are not scaled down, as a rule, to the level indicated by the Government mine prices. During the near future, however, it is believed that the matter will get down to a business basis, and that buying will be on a heavier scale than the trade can handle. It is frequently remarked that low prices will not solve the question of supply and transportation.

LOUISVILLE

Washington news dispatches announcing new Government prices paralyze business. Operators without official information are not selling and consumers not buying on former levels.

The first result of the newspaper reports from Washington as to the new schedule of prices fixed by the Government on coals of this section has been practical paralysis of the business. Operators have no information other than the public and representatives of operating corporations have no instructions as to selling prices. Numbers of operators have declined to accept any business and are now engaged in filling previous orders. Consumer contracts are, in numerous cases, being cancelled, although operators have not indicated an intention to consider the Government order applicable to their long-term contracts now being filled at losses. Here and there retail dealers have announced prices conforming to the Government's scale, but generally the retail level is without change from conditions of several weeks ago, with many dealers concerned about holdings bought high. Little selling is being done to domestic consumers. The whole coal trade is looking forward in the hope that something definite will develop quickly so that business, on some dependable basis, can be resumed.

No information on prices could be obtained and the representative of "Coal Age" found no operators in Louisville who reported sales.

BIRMINGHAM

Prices fixed by Government cause consternation in the coal-mining industry and practically paralyzes activities. Large delegation, armed with cost-sheet data, proceeds to Washington to seek relief from Federal officials to prevent the closing down of many mines. Negotiations still on for the adjustment of labor troubles between operators and United Mine Workers, with result much in doubt.

The announcement of the new schedule of prices at the mines for Alabama coal proved a veritable bomb in the ranks of the operators, and the labor troubles baled into comparative insignificance beside the ruinous effects of the new figures. It is claimed that the enforcement of the schedule will result in the immediate closing down of a large number of mines. A strong delegation of operators, armed with properly

certified cost sheets covering the production in the several fields is now in Washington and will endeavor to secure an adjustment in the rates which will admit of a fair margin of profit to the mine owners.

The demand for coal is good and consumers are offering premiums over the Government schedule, which, of course, could not be accepted, even if the coal was available. Production has been so vitally affected by miners failing to return to work as instructed by the union officials, pending the adjustment of their differences with the operators, that the mines have been unable to take care of orders in hand. Consequently there is practically no coal supply available for the spot trade. The new schedule for Alabama mines is as follows per net ton, mines:

	Mine-Run	Prepared Sizes	Slack or Screenings
Big Seam.....	\$1 90	\$2 15	\$1 65
Pratt, Jagger, Corona	2 15	2 40	1 90
Cahaba, Black Creek	2 40	2 65	2 15

Coke

CONNELLSVILLE

Prices stiffening again. Preference to Lake coal shipments makes further decrease in coke car supply. Prospects of Government price fixing.

In the last two days of last week the spot furnace coke market advanced rather sharply, until as high as \$16 was paid on one or two purchases. Monday of this week the market appeared very soft as buyers were entirely absent and asking prices dropped to \$13 or possibly less. On Tuesday a short car supply developed, the extra shortage being attributed to the priority order in favor of Lake coal shipments, since even coke racks was to be diverted if necessary, and the market started advancing, with initial sales at \$13.50 and prospects of \$14.50 or higher being reached.

Action by the Priority Board might remedy the situation, but the coke operators are not interested in making representations as in the long run they profit by car shortage. Coke consumers do not seem to be nearly as well organized as coal consumers and railroads in the Northwest, who have exerted continuous and intelligent pressure upon Washington in favor of the Lake coal trade.

An order by the President, fixing coke prices, is expected almost any day, as the cost reports recently called for have been furnished the Federal Trade Commission. It is possible, however, that the fixing of coke prices may be delayed on account of the complaint that has arisen over the lowness of the coal prices fixed last week. If the \$2 price for the Pittsburgh district should stand, the coke operators would hardly be allowed a higher coal value, as their vein is thicker and softer, and the ton and a half of coal involved would therefore not be more than \$3, while 75c. added for conversion would make \$3.75 for coke.

If the coke trade were to follow the example of the coal trade there would now be contracts in the making at prices higher than the expected Government price, as operators would give preference in shipment on such contracts. If anything of this sort is being done, however, no information has leaked out. We quote the spot market at \$13.50@14 for furnace and \$14@15 for foundry, per net ton at ovens.

The "Courier" reports production in the Connelville and lower Connelville region in the week ended Aug. 18, at 350,954 tons, an increase of 9001 tons, and shipments at 358,476 tons, an increase of 6416 tons.

Birmingham—There is a brisk demand for coke in this district, but practically no business being taken. The producing facilities are being heavily taxed under existing conditions to take care of orders in hand and in some cases it has been found necessary by furnace-operating companies to divert foundry coke for furnace consumption. The output has been curtailed considerably by the slowing down in mining operations incident to labor disturbances. Only a car now and then is available, quotations ranging from \$14 to \$16.50 per net ton ovens for foundry product in the spot market.

Buffalo—There appears to be no break in prices, though it was expected that they would be ordered down before this, as \$2 coal with which to make \$16 coke is an extremely odd state of things. Consumers are not buying any more than they must, as they consider the prices outrageously high. Jobbers quote 72-hour foundry, f.o.b. Buffalo, at \$16.85, 42-hour furnace at \$15.85 and stock at \$13. The week's receipts of iron ore by Lake were 219,807 gross tons.

Middle Western

GENERAL REVIEW

Buying during the past week very light. New price schedules expected to reduce production. Car supply shows improvement.

During the past week operators generally received numerous order cancellations from retailers as well as steam users. This, no doubt, was due to the expected reduction in prices, which has since been put into effect by the President's recent order. The cancellations in no wise have hindered production since the mines have been too far behind on orders to be affected, and the labor supply has been so far from satisfactory that the mines have not had much opportunity to catch up with current orders.

The new war prices as fixed by the President reduce the mine price on Illinois and Indiana coals approximately \$1.30 per ton on sized coal, 80c. on mine-run and \$1.05 on screenings, except in the thin vein field of northern Illinois where the reduction is 85c. on prepared sizes, 35c. on mine-run and 60c. on screenings. Strenuous efforts will, no doubt, be made to have these prices increased in some of the mining districts especially where the cost of production exceeds the general average return as fixed by this order.

The labor situation is far from satisfactory, and while there are fewer mines idle the past week than was the case throughout the two previous weeks, more trouble is expected and few mines are working within 75 per cent. of full crews. Preliminary steps are being taken by the miners of Illinois to have an election on Aug. 31, to decide whether or not the membership is in favor of a higher rate of pay, the same to be taken up by their officers, threshed out with the operators, and to date from Sept. 1. Just what increases are to be asked is not known, but the amount of the increases will in all probability be as much, if not more than the amount granted during April of this year.

The supply of empties for mine loading has shown some improvement the past week. Embargoes have, however, restricted the movement of eastern Kentucky and West Virginia coals for points in this territory. The Norfolk & Western and the Louisville & Nashville are badly congested, and little coal off the latter road is moving north of the Ohio River.

CHICAGO

Prices to consumers drop in Chicago. Announcement of new price schedules disturbs the trade, causing confusion and leaving retailers in doubt.

The big cut in the price of coal at the mines ordered by the President had this immediate reflection in a schedule of prices as announced by the Consumers Co., Chicago's largest retailers:

	New	Price	Old Price
Hocking Valley (Ohio) Lump.....	\$6 20	\$7 75	
Brazil (Indiana) Block.....	5 30	6 75	
Cartersville Lump-Furnace.....	5 45	6 75	
Franklin County prepared sizes.....	5 45	6 75	
Indiana Lump-Egg.....	5 30	6 75	
Southern Illinois Nut.....	5 45	6 75	
Pocahontas Mine-run (West Va.).....	6 50	7 50	
Pocahontas Lump-Egg (West Va.).....	8 00	9 00	
Solvay Coke—Egg and Nut.....	8 75	8 65	
Carbon Washed Nut.....	5 45	7 25	

Retailers who have made contracts for their supply of Eastern coals are much worried inasmuch as they stand to lose \$130 to \$160 per ton unless the contracts are abrogated. If the contracts are not abrogated quite a number will be forced into bankruptcy. Steps are being taken by Commissioner Kendall of the Chicago Retail Coal Merchants Association to lay the matter before Dr. Garfield, coal dictator appointed by the President.

No announcement has as yet been made by Chicago retailers relative to the new retail price of anthracite. Little of this coal is held in stock by the dealers, and the demand has been so keen that wholesalers have been unable to satisfy the local trade.

The Franklin County mines have had a better car supply the past week than for some time, and but little time was lost due to shortage of cars. About 15 per cent. of lost time was due to labor shortage, 10 per cent. to mine disability and less than 5 per cent. to car shortage. The production approximated 250,000 tons, and moved to a widely scattered territory.

The Williamson and Saline County mines were not so fortunate with respect to car supply as was Franklin County. The mines

have operated less than 65 per cent. and labor and car supply is responsible for the shortage. There has been plenty of orders and shippers are 3 to 4 weeks behind on orders.

The mines of the thin-vein field in northern Illinois are probably worse hit by the President's drastic price reduction than any other district of the two states—Indiana and Illinois. The production for most of these mines is small compared to the mines in the central and southern parts of the state. They have been worked a great many years necessitating a high cost, and more than half of them can not operate at a profit figuring their sales on basis of the new prices. Just what action is to be taken has not as yet been determined.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Springfield	Fulton and Peoria Cos.	Clinton and Sullivan Cos.	Green and Knox Cos.	Carterville
Domestic lump.....	\$2.20	\$2.20	\$2.20	\$2.20	\$2.20
Steam lump.....	2.26	2.20	2.20	2.20	2.20
Egg.....	2.20	2.20	2.20	2.20	2.20
Nut.....	2.20	2.20	2.20	2.20	2.20
Mine-run.....	1.95	1.95	1.95	1.95	1.95
Screenings.....	1.70	1.70	1.70	1.70	1.70

	Williamson and Franklin Cos.	Saline and Harrisburg	Poca. and W. Va. Smokeless	Penna. Smokeless	Eastern Kentucky
Lump.....	\$2.20	\$2.20	\$2.25	\$2.25	\$2.20
Egg.....	2.20	2.20	2.25	2.25	2.20
Nut.....	2.20	2.20	2.25	2.25	2.20
No. 1 nut.....	2.20	2.20	.....	.....	.....
No. 2 nut.....	2.20	2.20	.....	.....	.....
No. 3 nut.....	2.20	2.20	.....	.....	.....
No. 1 washed.....	2.20	2.20	.....	.....	.....
No. 2 washed.....	2.20	2.20	.....	.....	.....
Mine-run.....	1.95	1.95	2.00	2.00	1.95
Screenings.....	1.70	1.70	1.75	1.75	1.70

Hocking Lump \$2.60 Splint Lump \$2.40

Northern Illinois thin vein:

Prepared sizes.....	\$2.65
Screenings.....	2.15
Mine-run.....	2.40

MILWAUKEE

Dealers defend present prices on anthracite. Holders of large stocks of bituminous coal purchased at high prices are facing a possible loss.

In the opinion of Milwaukee coal dealers the scale of prices fixed by the Federal authorities on anthracite coal at the mines will not disturb the rates on that fuel which they are now charging. They hold that the prices set by the Government are substantially the same as have been paid and that transportation and other expenses also remain unchanged. The real difficulty they hold is not price, but supply, and as to that they affirm the future outlook is as much a problem to them as it is to the public.

Going prices on hard coal now are: Chestnut, \$9.50; egg and stove, \$9.25; buckwheat, \$7.50. Soft coal is selling as follows: Pocahontas, screened, \$9.75; mine-run, \$8.50; Hocking, \$8. An additional charge of 50c. per ton is made for carrying coal into bins.

The soft-coal situation presents a more serious phase, because dealers have been stocking up at prices ranging all the way from \$2.75 to \$4.75 per ton and will lose heavily if forced to meet the price named by the Government. They naturally expected that the coal on hand at the time of the promulgation of the Federal order would be exempted from its provisions, but even if this should be granted it is hard to comprehend how they can compete with coal which will enter the market under the new status of things.

As one dealer puts it: "Coal contracts are all drawn in favor of the customer and he will be able to get out of his contract for coal at a high price if he finds he can buy cheaper elsewhere. As a consequence, those dealers who did not contract for or put in large stocks of bituminous coal at the high prices will capture the business."

The Milwaukee County Council of Defense is endeavoring to have coal distributed by interurban electric lines and thus relieve the steam roads to a considerable extent. Receipts of anthracite coal via Lake from the opening of navigation up to Aug. 22 were 483,128 tons, against 483,897 tons during the same period last year and 564,052 tons in 1915. Receipts of bituminous coal during the same time aggregated 1,638,751 tons, as against 2,093,274 tons last year and 2,066,274 tons in 1915. Rail receipts of anthracite in the same period amounted to 1075 tons and of bituminous 208,883 tons. It must be understood that much of the coal received at Milwaukee by Lake was reshipped to interior points. Considerable coal has also gone forward by rail on roads connected with the car-ferry lines.

ST. LOUIS

Market unsettled but readjusting itself to new conditions. Demand for high grade exceptionally good. Other grades a trifle slow. Strike continues in Illinois and car shortage shows slight improvement. No Eastern coals. The domestic demand at a standstill. No prices as yet.

The market is trying to readjust itself to the new prices, but it is unusually hard here on account of the peculiar conditions prevailing in this market. The new prices were somewhat of a disappointment, not only to the shipper but to the retailer, for the reason that some companies have enormous quantities of coal stored at the high price. The Polar Wave Ice and Fuel Co. has over 200 cars in storage, and other companies smaller quantities.

The anthracite that has been selling on the market here recently has been bringing from \$10 to \$10.50 and \$10.75, being premium coal, since but little coal was shipped in on the circular.

There is no tonnage moving here from West Virginia and nothing from Arkansas. The price of coke has not been changed as yet.

The prevailing circular per net ton f.o.b. mine is:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump.....	\$2.35	\$2.35	\$2.35
3x6 in. egg.....	2.35	2.35	2.35
2x3 in. nut.....	2.35	2.35	2.35
No. 2 nut.....	2.35	2.35	.....
No. 3 nut.....	2.35	2.35	.....
No. 4 nut.....	2.35	2.35	.....
No. 5 nut.....	1.85	1.85	.....
2-in. screenings.....	1.85	1.85	1.85
2-in. lump.....	.....	2.35	2.35
3-in. lump.....	.....	2.35	.....
Steam egg.....	2.35	2.35	2.35
Mine run.....	1.90	2.10	2.10
Washed:			
No. 1.....	2.35	2.35	2.35
No. 2.....	2.35	2.35	2.35
No. 3.....	2.35	2.35	2.35
No. 4.....	2.35	2.35	2.35
No. 5.....	1.85	1.85	1.85

Williamson and Franklin County rate 87½c. Other fields, 72½c.

SEATTLE

Government price setting, withdrawal of fuel oil and demands for coal exceeding production make future uncertain. Coal shortage unquestionable.

While the general public will probably not receive the benefits of the government's setting of coal prices at the mine for some little time, the impression seems to prevail that such action would clarify the coal price situation in the Northwest. It has had just the opposite effect. High prices which have obtained in this territory for some time were not set at the mine but by the wholesalers and retailers, and as the Government has not yet set the prices these middlemen shall charge, the Northwestern consumer will likely pay as high or a higher price for his fuel than before.

Mounting prices last month stimulated buying for winter consumption and those who visioned famine prices later were busy placing orders. Consumers now, operators and retailers predict, will hold off on their buying in the hope that prices will come down. This will occur, of course, but in the meantime the increased demand from industrial plants, which will be compelled to turn from oil burners to coal as a result of the withdrawal of all fuel oil the Northwest, will exhaust storage and make future deliveries uncertain.

There is no question but what there will be a serious shortage in the Northwest this winter and the small consumer who is holding off in placing his orders is going to suffer, regardless of the fact that coal production will probably increase 2000 tons a day, that new mines are being opened and old ones are rushing new development.

Washington operators will have to be content with the price set by the Government, but as has been pointed out before the cost of mining coal in this state is higher than in any other coal-mining district in the country.

Foreign Markets

Reported by Hull, Blyth & Co. of London and Cardiff.

Aug. 9—Coal—There is no change to report in market conditions except that short trade tonnage has been somewhat more plentiful.

FIXED REGULATION PRICES

Best Welsh steam.....	\$8.02
Best seconds.....	7.67
Seconds.....	7.47
Best dry coals.....	7.39
Best Monmouthshires.....	7.39
Seconds.....	7.15
Best Cardiff smalls.....	5.58
Cargo smalls.....	4.86

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of warfare.

Freights—There is no change to report in the freight market, which maintains its high level.

Gibraltar.....	\$21.26	Port Said.....	\$35.23
Marseilles.....	21.80	Las Palmas.....	18.25
Genoa.....	24.60	St. Vincent.....	19.44
Naples.....	23.77	River Plate.....	27.33
Alexandria.....	41.31		